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REPORT OF THE SECRETARY OF AGRICULTURE 1967

AGRICULTURE/2000

UNITED STATES DEPARTMENT OF AGRICULTURE

Department of Agriculture
Washington, D.C.

THE PRESIDENT
The White House
Washington, D.C.

Dear Mr. President:

It is my privilege to present to you this report entitled, "Agriculture/2000," a brief account of the services rendered by the U.S. Department of Agriculture to our farm and rural people and the entire Nation during the past year.

As the report shows, 1967 was a year of significant progress toward most of the Department's major goals—a year in which the USDA, under your general guidance and with your firm support, played a leading role in helping agriculture move more fully into a new and challenging era.

It is our responsibility in USDA to help assure fair income for farmers and abundance for all our people; to provide leadership in the war on world hunger; to plan and promote rural-urban balance through the development of revitalized rural communities; to improve and make wise use of our natural resources; to use scientific resources to provide greater benefits for all people; and, in general, to expand the dimensions of American living, particularly in the area of nutrition.

During 1967 we moved toward these goals with confidence and determination, building our progress on the great accomplishments of the past and laying the groundwork for even faster progress in the future.

And so it is with pride in the dedicated and skillful public servants who work with me in the USDA, that I submit my annual report as Secretary of Agriculture for the year 1967.

Orville L. Freeman

ORVILLE L. FREEMAN
Secretary of Agriculture

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May, 1968

ENTERING A NEW ERA

When 1967 is reviewed in the context of agricultural history a decade or so from now, it may well be regarded as the year in which the Department of Agriculture entered fully upon a new era. The farm surpluses were gone. Programs were at hand to promote a more balanced and sustained abundance and to stabilize farm income.

Without in any way lessening our concern for the present, we were able to look more thoughtfully toward the future, toward what we call Agriculture/2000.

Agriculture/2000 visions the USDA *working today for a better tomorrow*—and driving specifically toward six major missions or goals. They are:

- To achieve a *sustained and balanced agricultural abundance with fair income* for our farmers.
- To provide *new markets* for our food, feed, and fiber, and to help *growing nations* win the war on hunger.
- To build livable and healthy *communities of tomorrow* by revitalizing rural America and restoring rural-urban balance.
- To conserve and improve our land, water, and timber, and to *activate* these *resources* fully for the benefit of all our people.
- To use agricultural *science* to the fullest extent *in the service of man.*
- To expand the *dimensions of American living* and specifically to wipe out under-nutrition in America.

WHERE AGRICULTURE STANDS

Agriculture today is far better equipped to play its full role in the national economy than it was 7 years ago.

Income and Abundance

New farm programs provided by the Emergency Feed Grain Act of 1961 and the Agricultural Acts of 1961 through 1965 led to a dramatic improvement in the farm situation.

They reversed the declining trend of farm income. During the 1950's net farm income dropped 12 percent. During the 1960's farm income has risen 24 percent—despite a disappointing decline in 1967.

From 1961 to 1967 net farm income averaged nearly $13.7 billion—$2 billion a year more than the average of the preceding 7 years.

Net income per farm in 1967 is estimated at $4,573—55 percent higher than in 1960.

The new programs also reversed the rising trend of the surpluses. The wheat carryover which had climbed to 1.4 billion bushels in 1961 was down to 426 million bushels on July 1, 1967.

The feed grain carryover which had soared to 85 million tons was only 37 million tons on October 1, 1967.

The cotton carryover which rose to 16.9 million bales in the 1965–1966 marketing year will be about 6.7 million bales at the end of the

1967–1968 marketing year—in part because of extremely unfavorable weather.

The inventory of commodities *owned* by the Commodity Credit Corporation has dropped from over $6 billion to less than $1 billion, the lowest since 1952.

Many factors, of course, contributed to the improved farm stiuation. Eighty-four months of continuous economic prosperity, resulting in a rise of 55 percent in consumers' disposable income, increased domestic demand. Crop failures in India triggered record exports of U.S. wheat to prevent famine.

But a most necessary and basic factor has been the remarkable agricultural legislation of the past 7 years, especially the Food and Agriculture Act of 1965.

The farm legislation of these years, however, did much more than establish programs to improve farm income and balance abundance. It provided the means for us to push forward toward all our major goals.

To provide *new markets* for our food, feed, and fiber, and to help *growing nations* win the War on Hunger, Congress extended and improved Public Law 480.

To make a start toward building livable and healthy *communities of tomorrow*, Congress set up new and expanded programs for housing, community water and sewer systems, and other local facilities.

To conserve and improve our land, water, and timber, and to *activate* these *resources* fully for the benefit of all our people, Congress provided resource programs under the various Food and Agriculture Acts, the Land and Water Conservation Fund Act, the Wilderness Act of 1964, the Federal Water Project Recreation Act of 1965, the Appalachian Regional Development Act of 1965, and the amended Watershed Protection and Flood Prevention Act.

To use agricultural *science* to the fullest extent *in the service of man*, Congress authorized grants for applied research and grants to strengthen the staffs of smaller schools. The McIntire-Stennis Act enables us to help the States with forestry research. Other legislation strengthened research to reduce the costs of cotton production and provided a strnoger pesticide registration law.

To expand the *dimensions of American living* and specifically to wipe out under-nutrition in America, Congress passed the Food Stamp Act of 1964, the Child Nutrition Act of 1966, expanded the School Lunch Program, extended the Special Milk Program with the Armed Forces and Veteran's Hospitals, and passed the Wholesome Meat Act of 1967.

The programs provided by these various laws interlock to form a remarkable combination of services to farmers, consumers, agribusiness, and the whole Nation. The sum total of this legislation is unique in U.S. history.

I have already mentioned two great overall results: The upswing in income and the end of the surpluses. Behind these results were many more specific advances.

Growing Nations—New Markets

With the help of an improved P.L. 480 and a hard driving export market development program, our total agricultural exports climbed

from $4.5 billion in fiscal 1960 to $6.8 billion in fiscal 1967—a gain of 51 percent.

Sales for dollars rose from $3.2 billion to $5.2 billion—up 62 percent.

For the calendar year, exports totaled $6.4 billion. While this was less than in calendar year 1966, it was the second highest on record and about one-third more than in 1960.

The export story, however, is only one face of the coin. The other face is the progress that has been made in realistic efforts to close the world hunger gap. Nations that once depended chiefly on aid are now able to turn increasingly to trade to meet their needs.

Communities of Tomorrow

We are seeking to restore rural-urban balance in America through increased opportunity in rural communities, and a good start has been made.

Operating loans and grants by Farmers Home Administration to aid low income farm families have increased by 60 percent since 1960. Loans to promote farm ownership by small farmers have increased nearly five-fold. Since January 1965, Economic Opportunity loans have enabled more than 50,000 low income rural families and individuals to set up small businesses or improve low income farms.

Funds to build modern water and sewer systems in rural communities have risen from less than $2 million in fiscal 1961 to almost $200 million in fiscal 1967. In fiscal 1967 alone these funds helped build or improve 1,100 rural community water or sewer systems.

From January 1, 1961, through June 30, 1967, USDA loans provided new or improved housing for 630,000 rural people, including 20,000 senior citizens and 15,000 farm laborers. In fiscal 1967, the programs provided funds for 49,000 new or modernized dwelling units in rural areas.

Loans to improve rural electrification and rural telephones are nearly 60 percent greater than in 1960. From 1960 to 1967, rural electric power sales increased 94 percent, and the number of consumers rose about 1 million.

About 830,000 additional telephone subscribers were served by REA-financed systems during this period and the proportion of farms with telephones increased from 67 to 80 percent.

Resources in Action

Department conservation programs are giving extra emphasis to the multiple use development of all natural resources. They are offering far more services to low income and small farmers and to rural communities. Outdoor recreation, natural beauty, and wildlife are receiving greater attention in agricultural, forestry, and watershed programs.

We're integrating conservation with economic development through multicounty Resource Conservation and Development projects.

Seven years ago there was not one RC&D project in the United States. At the end of 1967, 41 had been approved for planning and operations, embracing an area almost as big as Iowa, Illinois, and Wisconsin combined. Each of these projects is "multipurpose." Each conserves natural resources in an integrated, well-planned manner.

Each brings jobs to local communities, conserving the human and economic base of rural America.

Seven years ago we had only 312 watershed projects approved for operations; now we have 827. Multipurpose projects have increased from 95 to 439.

Probably nowhere is the multiple purpose aspect of the Department's conservation efforts more evident than in the National Forests.

Expenditures to develop and protect our National Forests are now more than double the 1960 level. National Forest Recreation use has grown from 90 million visitor-days in 1960 to more than 150 million last year. With the development of 3,800 new recreation sites, capacity to accommodate people at one time has been increased to 1.2 million, nearly double the 1960 capacity.

Sound management has increased the allowable annual timber cut in the National Forests more than 20 percent. The actual timber harvest has increased 15 percent—from 9.4 billion board feet to 10.8 billion.

Science in the Service of Man

Agricultural research and extension are the bedrock of agricultural progress. Research increases farmers' production and marketing efficiency—finds better ways to use, conserve, and improve natural resources—invents new agricultural products—develops new and better methods to control pests.

So many specific advances have been made through research since 1961 that it is difficult to select the most representative achievements.

We can cite major contributions to the development and improvement of wash-and-wear garments, stretch cotton, and shrinkproof wool. New convenience foods include instant sweetpotato flakes, orange crystals, full fat dry milk, and quick-cooking beans. We have found a practical way to flameproof cotton.

Newly developed mechanical harvesters have replaced high cost labor in picking cherries, tomatoes, apples, and many other fruits and vegetables.

The screwworm, which used to cost livestock producers in the South $100 million a year in losses, has been wiped out by sterilizing and releasing large numbers of male flies. We are now using this technique on other pests.

Regulatory, monitoring, and research programs are providing the American public with safer, more effective pesticides.

Forestry research has led to the creation of a Southern pine plywood industry in the South. It now employs more than 6,000 workers in three dozen plants and produces 2.7 billion square feet of plywood for new homes.

Some high protein foods and mixtures developed by research are already helping stave off protein malnutrition among millions of people. These include CSM—a corn, soybean, and milk mixture; a similar mixture using wheat; and wheat fortified with the protein lysine. A promising new process has just been developed for making cottonseed flour that is 65 percent protein.

Scientists have found a way for hungry villagers in underdeveloped countries to make their own soybean flour in five easy steps. They have also worked out a process for peeling the bran off wheat to produce a pearly-white kernel that can be eaten like rice. This new WURLD

wheat got high ratings when market-tested by commercial companies in the Orient.

Expanding Dimensions for Living

Seven years ago the Department was making a small list of surplus foods available to the needy through a direct distribution program. The typical family in the program received a small monthly issue of cornmeal, flour, lard, nonfat dry milk, and rice.

Following President Kennedy's Executive Order No. 1, the quantity and kinds of surplus foods distributed to the needy were doubled.

In the fall of 1967 the typical family in the program received 14 foods, including meat, cheese, and butter.

By year-end 1967 school lunches were being served to 19.5 million children—5 million more than in 1961. Lunches were being served free to 2.5 million children. Under the Child Nutrition Act, 80,000 undernourished children were getting good breakfasts.

Milk consumption by children in the Special Milk Program was about 25 percent greater than in 1961.

In expanding dimensions for living, we are concerned not only with nutrition but with the safety of the Nation's food supply. The Wholesome Meat Act enacted in 1967 will give further assurance to consumers that the meat they eat is safe for health.

This, in brief, is our record of progress toward our major goals. Now let us look in some detail at the specific advances made during 1967.

THE FIRST GOAL: INCOME AND ABUNDANCE

The year 1967 was, more than most years, a mixture of ups and downs. Production was up, resulting in an oversupply of a number of crops and products. Exports were up, especially sales for dollars. The trend in research, in conservation, in rural development was forward and upward. The USDA was thinking and planning in terms of present and future goals under the common theme Agriculture 2000, laying the groundwork for great and accelerating progress in the future.

But there were downs also, some pleasing, others disappointing. We were pleased at the continued reduction in government-owned stocks of farm commodities. We were pleased to see the Commodity Credit Corporation investment in farm products fall to $3.4 billion. But farmers and the USDA were both greatly disappointed by a decline in farm income and prices.

FARM INCOME FALLS

Realized net farm income was about $14.5 billion in 1967. This was almost 12 percent below the 1966 figure of $16.4 billion but was otherwise the highest since 1951.

Gross farm income was $48.9 billion, second only to the record high gross income of $49.7 billion in 1966. Cash receipts from farm marketings totaled $42.5 billion, about 1½ percent below 1966. Smaller receipts from sales of livestock and livestock products accounted for most of the decline. Prices fell about 5 percent, more than offsetting the larger volume of livestock and livestock products marketed.

Cash receipts from crops were about the same as in 1966. A sizable increase in the volume of crops marketed was offset by a drop in average prices.

Overall, prices received by farmers averaged about 5 percent lower than in 1966. Government payments to farmers were about 6 percent less than a year earlier.

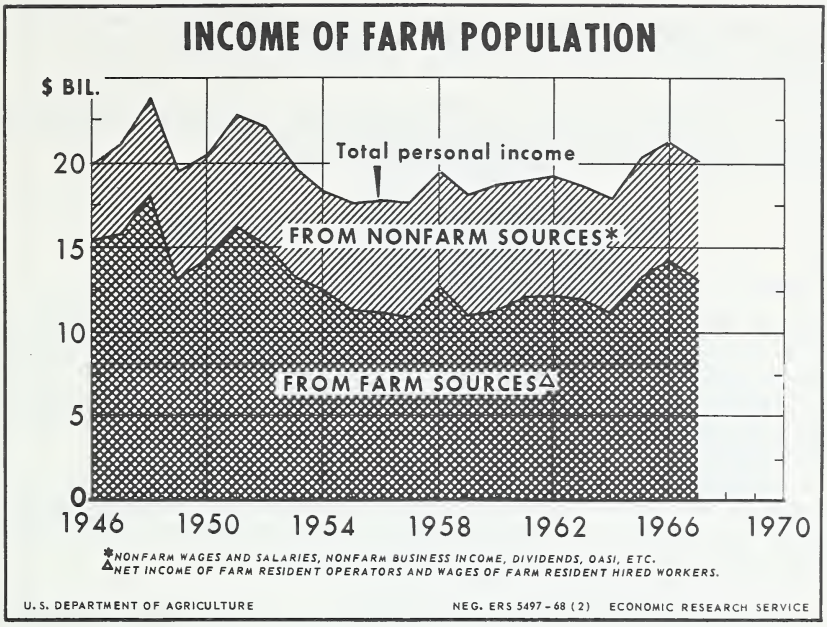
On the other hand, farm production expenses rose to a record high level of $34.4 billion—an increase of $1.1 billion over 1966. Since 1953, these expenses have increased every year but one, 1964.

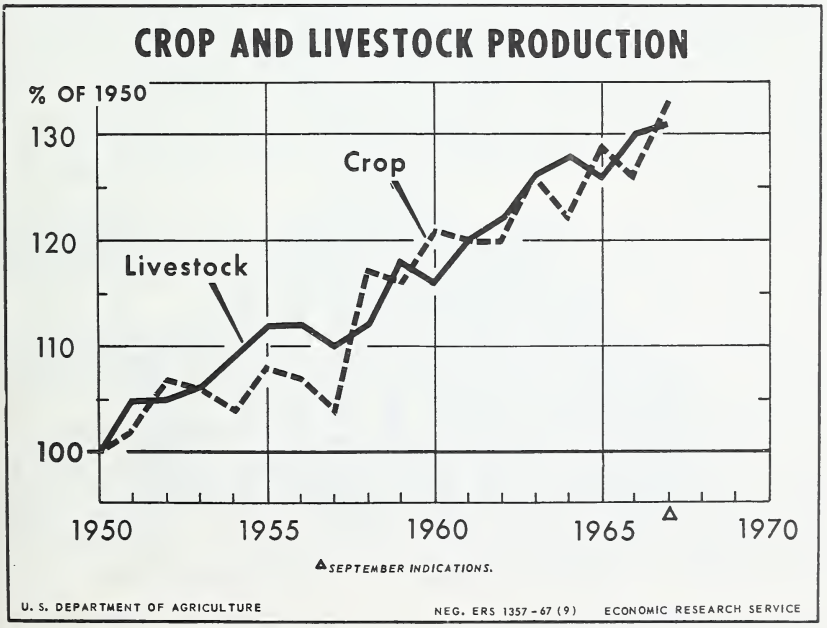
Net income realized per farm also fell in 1967, being estimated at $4,576 compared with the 1966 high of $5,049. The 1967 figure, however, was still 55 percent, or about $1,600 more than in 1960.

Thus, 1967 was a year of mixed trends. The outlook for 1968, however, may be described as "cautiously optimistic." Sound Government action, coupled with prudent planting and marketing by farmers, could result in a price upturn and resumption of the year by year progress that has been the rule since 1961.

FARM PRODUCTION SETS NEW RECORD

U.S. farm production in 1967 reached an alltime high. Both crop and livestock production rose about 3 percent above 1966. Acreage harvested for the 59 major crops totaled 301 million acres, the largest since 1960. This compared with 288 million acres in 1966. Corn, rice,


INCOME OF FARM POPULATION
$ BIL.
20
15
10
5
0
Total personal income
FROM NONFARM SOURCES*
FROM FARM SOURCES△
1946
1950
1954
1958
1962
1966
1970
*NONFARM WAGES AND SALARIES, NONFARM BUSINESS INCOME, DIVIDENDS, OASI, ETC.
△NET INCOME OF FARM RESIDENT OPERATORS AND WAGES OF FARM RESIDENT HIRED WORKERS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5497-68 (2) ECONOMIC RESEARCH SERVICE


CROP AND LIVESTOCK PRODUCTION
% OF 1950
130
120
110
100
Crop
Livestock
1950
1955
1960
1965
1970
△SEPTEMBER INDICATIONS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 1357-67 (9) ECONOMIC RESEARCH SERVICE

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hay, and peanuts, among other crops, had record yields. On the other hand, yields of wheat, soybeans, sorghum grain, and cotton were below 1966.

Farm production per man-hour continued its sharp upward climb. The average farm worker now supplies food and fiber for roughly 40 persons, about 18 more than he could a decade ago.

THE CHANGING SUPPLY SITUATION

Turnabout in Wheat

A record U.S. wheat crop of 1,524 million bushels in 1967, combined with super harvests in most of the major grain exporting nations, caused market prices for 1967 crop wheat to drop to disappointingly low levels. However, wheat marketing certificates for farmers cooperating in the wheat program helped alleviate the situation for many producers.

Farmers received about $731 million in certificate payments. This meant an increased return of 48 cents on each bushel of wheat produced by cooperators. The total cash return in 1967 was about $115 million above the previous record of $2.7 billion in 1966.

Here is the background of the situation.

A potential world wheat shortage seemed to be developing in 1966. A drought-caused crop failure in India, poor crops in some of the wheat exporting countries, and declining world grain carryovers caused great concern about the adequacy of existing wheat reserves in importing countries. As some buyers began to purchase wheat for use further in the future than usual, trading in world wheat spurted. The monsoons in India were failing for the second consecutive year. The USSR and Mainland China were buying vast quantities of wheat from free world suppliers other than the United States. Many of the developing countries were extremely short of grain. Our own carryover was below the desirable reserve level. Rather extensive drought conditions were reported in Western Europe, North Africa, Argentina, and Australia.

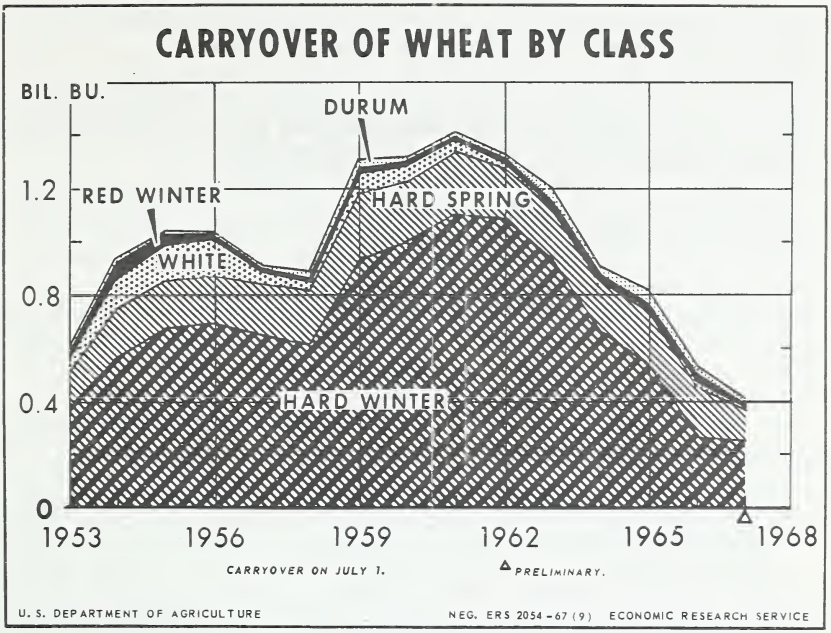
Faced with what could become a severe world crisis, we increased our 1967 national wheat acreage allotment to 68 million acres—32 percent more than in 1966. The record 1967 crop of 1.5 billion bushels resulted, some 213 million bushels more than the 1966 crop.

In 1967, however, world weather trends reversed themselves. Wheat export nations generally had bumper crops. World grain requirements declined as importing nations, including India, our biggest customer for wheat, also had bigger crops.

Our 1968 wheat allotment, consequently, was cut back 13 percent to 59.3 million acres. The national average price support loan level is being continued at $1.25 per bushel. Marketing certificates will be issued on 40 percent of allotment (the proportion of the U.S. wheat crop consumed domestically), and the value of the certificates will be the difference between full parity and the $1.25 loan value.

Feed Grain Output Soars

Record corn and sorghum grain crops pushed 1967 total feed grain production to an alltime high of 175.1 million tons. This exceeded 1966 output by 11 percent and the 1961–65 average by 20 percent. The


CARRYOVER OF WHEAT BY CLASS
BIL. BU.
DURUM
1.2
RED WINTER
HARD SPRING
WHITE
0.8
0.4
HARD WINTER
0
1953
1956
1959
1962
1965
1968
CARRYOVER ON JULY 1.
△PRELIMINARY.
U. S. DEPARTMENT OF AGRICULTURE
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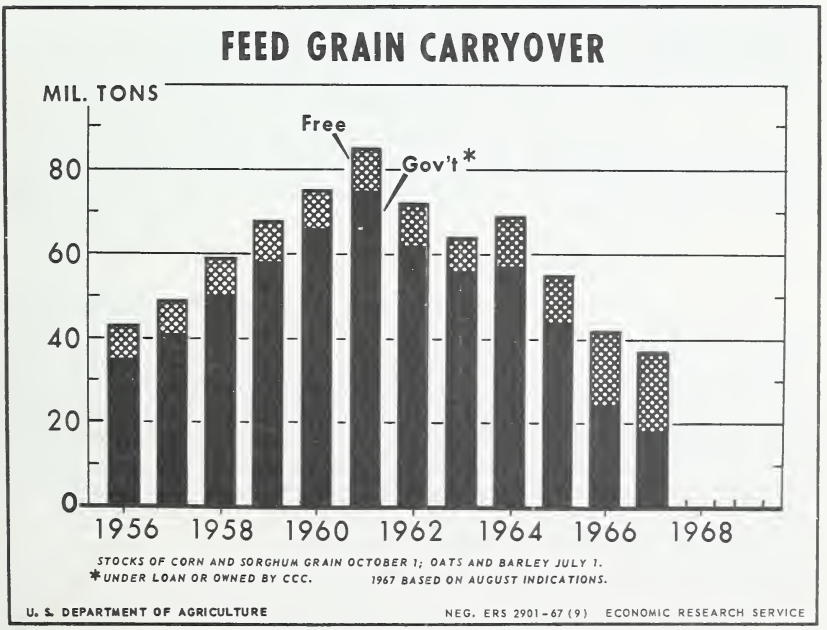
FEED GRAIN CARRYOVER
MIL. TONS
Free
Gov't *
80
60
40
20
0
1956
1958
1960
1962
1964
1966
1968
STOCKS OF CORN AND SORGHUM GRAIN OCTOBER 1; OATS AND BARLEY JULY 1.
*UNDER LOAN OR OWNED BY CCC.
1967 BASED ON AUGUST INDICATIONS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 2901-67 (9) ECONOMIC RESEARCH SERVICE

record crop will enable us to meet all requirements for 1967–68 and will also provide some increase in carryover.

Under the feed grain programs, in operation since 1961, carryover stocks have been reduced from the huge surplus of 85 million tons in 1961 to about 37 million tons in 1967. The effectiveness of the programs and generally strong demand for feed grains resulted in a rise in feed grain prices of 22 percent between 1960–61 and 1966–67.

With the carryover at a more desirable level, we adjusted the 1967 program accordingly. Farmers signed up to divert 21.5 million acres of feed grains in 1967, compared with an actual diversion of about 35 million acres in each of the two preceding years.

However, the big 1967 crop together with large "free" carryover stocks (stocks not in government-held storage) resulted in a record "free" supply 11 percent larger than in 1966–67. This and a decline in exports caused a substantial drop in 1967 feed grain prices.

As was the case with wheat, program participants had a big advantage over nonparticipants.

> In Illinois, for instance, the 1967 corn crop was a bumper 1.1 billion bushels. About 700 million bushels came from farms not participating in the 1967 program. In Central Illinois at mid-November, No. 2 corn brought about 91 cents per bushel in the local market. But program participants did much better than this. The local loan level was $1.07. With the average 20-cent-per-bushel price support payment to program participants added to the $1.07 loan level, the guaranteed minimum total price support for participants was $1.27 per bushel. On a bushel-for-bushel basis, therefore, a program participant could immediately get at least 35 cents a bushel more than nonparticipants.

Under the 1968 feed grain program farmers have signed up to divert 34 million acres of cropland from feed grains. The 2 or 3 percent overproduction in 1967 will be compensated for by the 2 or 3 percent reduction sought for 1968.

Meanwhile, to firm up the market, we stopped sales of CCC stocks of feed grains during the harvest season, made on-farm storage bins available to areas where such equipment was not previously used, and announced "reseal" loan availability for the 1967 crops. We also stressed the importance to program participants of using the price support loan program to spread marketings and thus avoid market gluts and lower prices.

Soybeans: The Miracle Crop

Soybean production in 1967 climbed to another new record of 973 million bushels, 5 percent more than in 1966, and 35 percent above the 1961–65 average.

With a 1967 gross return of $2,435 million, soybeans now rank second in total value among U.S. crops, exceeded only by corn. Cash income from soybeans has increased more than two and one-half times in the past 10 years. Exports (including value of soybean oil and meal) exceeded $1 billion in 1967 nearly triple the level of 10 years ago.

End of Cotton Surplus in Sight

Upland cotton production in 1967 totaled only 7.4 million bales, the smallest since 1895. Heavy acreage diversion and extremely unfavorable weather conditions combined to reduce the crop and cut a big slice out of the cotton surplus, which had reached a record 16.6 million bales on August 1, 1966.

In 1967, the 4-year cotton program, authorized by the Food and Agriculture Act of 1965, was in its second year of operation. Carryover on August 1, 1967, totaled 12.3 million bales. We estimate that by August 1, 1968, the surplus will be eliminated, and a more nearly normal carryover of 6.5 million bales will be on hand.

Many producers suffered partial or complete crop failure in 1967 due to adverse weather. Here again a sound program proved its value. Diversion payments, which are based on projected rather than actual yield, provided badly needed income to these producers. Payments, including price support, in 1967 totaled $932 million.

With the end of the surplus in sight, the 1968 program is geared to producing a crop more in line with the estimated total utilization for both domestic use and export. We are aiming at a crop of between 13 and 13.5 million bales.

Dairy Products

Milk production totaled 119.3 billion pounds in 1967, down 0.5 percent from 1966, as improved farm milk prices slowed the decline in milk cow numbers and as output per cow increased. However, increased dairy product imports in the first half of 1967 added substantially to milk supplies.

This, combined with a decline in commercial sales of dairy products, caused CCC purchases of dairy products to rise to an estimated equivalent of 7.4 billion pounds of milk, from only 0.6 billion in 1966. CCC purchases were equivalent to about 6.5 percent of total U.S. milk production in 1967.

More stringent dairy import quotas were established and put into effect in mid-1967 to reduce annual imports to an estimated 1 billion pounds milk equivalent. This action reduced July–December imports sharply from the 4.4 billion pound annual rate in January–June. For all of 1967, imports totaled 2.9 billion pounds milk equivalent, compared with 2.8 billion in 1966.

Higher dairy support prices for manufactured grade milk in the first half of 1967 and increased Class I prices in Federal order markets raised milk prices received by farmers in 1967 by about 4 percent over 1966. Farm cash receipts from milk and cream rose to $5.8 billion, compared with the previous record of $5.5 billion in 1966.

Meat and Eggs

Red meat production in 1967 was up about 5 percent, poultry meat output was record large, and egg production was up 5½ percent from the previous year. Because of these large supplies, prices received by producers of hogs, broilers, turkeys, and eggs were substantially lower than in 1966. Prices were lower for beef cattle also during the first half of 1967, but they averaged higher in the second half.

To help producers market large supplies and to provide commodities for the school lunch and needy persons programs, the Department purchased 2.4 million pounds of dried whole egg solids, and substantial quantities of young ready-to-cook chickens, young ready-to-cook turkeys, and beef and pork products.

Rice Output at Alltime High

Rice production reached a new high of 89.6 million cwt. in 1967, about 5 percent more than the previous record of 1966. With prices averaging $4.90 per cwt. for the season, producers had another banner income year. Their cash receipts from rice totaled about $442 million in 1967 compared with the previous record of $405 million in 1966.

Exports of rice for dollars were also at a new high of $171 million in fiscal 1967. Japan remained the major dollar buyer, but South Vietnam was again the largest single recipient of U.S. rice, all of it received under food aid programs.

Although the United States is only a minor factor in world rice production, we are the second largest supplier of rice to world markets.

Tobacco Surplus Still Declining

For the third consecutive marketing year, tobacco stocks are declining, even though total production for 1967 was 2.0 billion pounds, compared with 1.9 billion in 1966. Carryover under price support loan in 1967 dropped to 1,044 million pounds—compared with 1,175 million a year earlier.

The continued improvement in the supply situation is due mainly to the acreage-poundage program for flue-cured tobacco, which was in its third year of operation in 1967. The program encourages growers to produce tobacco of the best flavor and aroma.

In 1967, flue-cured growers approved the acreage-poundage program for the 1968, 1969, and 1970 crops.

U.S. exports of unmanufactured tobacco in 1967 rose 4 percent above 1966 and were the largest since 1946. Among the principal contributing factors were our export payment program strengthening the competitive position of our tobacco, and the improved quality of recent flue-cured crops due to the acreage-poundage program.

Peanut Production Also Sets Record

Peanut production of 2.5 billion pounds in 1967 was a new high, 4 percent above 1966. Production has nearly doubled since 1952, even though the acreage allotment has remained at 1.6 million acres.

Increased yields and the price support program have enabled farmers to boost income from peanuts. Without the program, gross income from peanuts would be at least $100 million smaller. The farm value of the 1967 crop is estimated at $283 million, compared with $271 million for the 1966 crop. This is about $100 million more than the value of peanut crops in the early 1960's.

Besides aiding producers, the peanut program helps to assure consumers an ample supply of quality peanuts at reasonable prices.

A quality-control program, which was started with the 1965 peanut crop to insure that only the best grades of peanuts find their way into food uses, was continued in 1967.

Costs for the peanut program, however, have been increasing. We are exploring every possible way to reduce costs without impairing program efficiency.

CCC Investment Continues Decline

The inventory of commodities owned by CCC dropped below $1 billion at the end of calendar year 1967. This was the lowest since 1952. The comparable figure in December 1960 was $6.1 billion.

In addition to its inventories, CCC had $2.4 billion of price support loans outstanding as of December 1967—compared with $1.8 billion in 1960.

Price support extended on 1966 crops through loans and purchases during fiscal 1967 totaled $1.7 billion—compared with $2.3 billion extended a year earlier on 1965 crops.

Price support commodities with a cost value of $2.7 billion were moved out of CCC inventories during fiscal 1967.

Now that supply and demand for the major crops are more nearly in balance than they have been for many years, the need for orderly marketing by farmers is assuming much larger dimensions. The CCC is helping farmers by making available the equipment needed for orderly marketing. The CCC at one time had grain storage capacity of just over 1 billion bushels. In fiscal 1967 more than 165 million bushels of this storage capacity—mostly steel bins—was sold to farmers to increase their on-farm storage capabilities. This, added to sales in previous years, has made available to farmers more than 500 million bushels of storage capacity the CCC once held.

1968 Programs Worked Out With Farmers

In formulating farm program plans for 1968, we made extensive efforts to consult with farmers throughout the country.

In February 1967, we held a national Farm Policy Conference in Washington. Leaders of farm and commodity organizations representing all major segments of agriculture as well as individual farmers attended. The group expressed overwhelming support for continuation of the feed grain, wheat, rice, cotton, and tobacco programs, and made a number of recommendations.

In May we held large "shirtsleeve" meetings at Hutchinson, Kansas; Ames, Iowa; Athens, Georgia; and Alexandria, Louisiana. An additional 63 meetings were conducted in 31 States by officials of the Agricultural Stabilization and Conservation Service and other agencies of the Department. At all these meetings farmers were asked for their advice and counsel on farm programs and the direction future decisions should follow.

In late May and early June, we had 15 informal hearings on the wheat program. Farmers, processors, and others expressed their views on prospective wheat supplies and needs as a basis for establishing the 1968 national wheat acreage allotment.

In August, we held 14 meetings throughout the cotton-producing States in connection with the 1968 cotton program, and early in October we held 12 informal hearings on the 1968 feed grain program.

The 1968 programs strongly reflect the general attitude of U.S. farmers on wheat, feed grains, and cotton acreage.

OTHER INCOME AND ABUNDANCE PROGRAMS

Oher programs and services administered by USDA also promote orderly marketing for the benefit of producers and consumers alike.

Marketing Agreements and Orders

Marketing agreements and orders, for example, enable farmers to increase their bargaining strength, to fit supply to demand, to expand markets, and generally to work together to solve marketing problems. These are voluntary programs initiated and designed by farmers and operated with USDA guidance.

About two-thirds of the milk bought by Americans for drinking in fiscal year 1967 came from milk dealers who paid farmers for their milk based on prices set under 73 Federal milk orders.

Farmers marketed nearly $1.5 billion worth of fruits and vegetables in fiscal 1967 under 49 agreements and orders covering fresh citrus and deciduous fruits, dried fruits, tree nuts, peanuts, potatoes, vegetables, and hops. A new program became effective for hops in July 1966, and the Texas citrus marketing order was amended in November 1966 to provide for advertising and sales promotion activities. Import regulations were administered for avocados, limes, oranges, grapefruit, dates, walnuts, potatoes, onions, and tomatoes.

Cotton producers joined the ranks of farmers utilizing marketing agreements and orders as authorized by the Cotton Research and Promotion Act of July 13, 1966. Farmers approved a $1 per bale assessment on upland cotton to support cotton research and promotion activities. A Cotton Board, selected by the Secretary of Agriculture from nominations made by cotton producer organizations, administers the program.

Market News Program

Every day, across the Nation, market news reporters gather up-to-the-minute information on supply and demand and the prices of agricultural products. These vital facts are quickly relayed nationwide to guide producers in selling their products and to help the agribusiness community to operate smoothly, efficiently, and equitably.

More than 200 Federal Market News Offices (tied in with hundreds of State offices) gather this information and make it available coast to coast through a 20,000 mile leased wire network. More than 400,000 different reports, covering all farm commodities, were prepared and distributed in 21 million separate mailings during fiscal 1967. The mass media also cooperate extensively in getting market news to the public.

Significant expansion or changes in the service in fiscal 1967 included:

Increased use of automatic telephone answering recorders to allow farmers and others to call the market news office at any time and get the latest information. Fruit and vegetable reports became available in this manner in 1967 in St. Louis, Mo.; Bridgeton, N.J.; Pompano Beach, Fla.; and Rocky Ford and Greeley, Colo.

Inauguration of cotton market news reports in Spanish by three Texas radio stations to accommodate the many Spanish-speaking farmers in south Texas.

A new report on the estimated number of animals slaughtered under Federal inspection to give industry the facts on a daily basis.

A new carlot meat trade report based on sales of meat in Iowa and surrounding States; it covers sales by 34 packers who process an estimated one-third of the Nation's federally inspected beef and pork.

New reports on livestock auctions in Iowa, Colorado, Tennessee, and Arkansas, in response to the increasing influence of auction markets on cattle sales.

New cooperative agreements were signed with several States in fiscal 1967. In addition, an agreement with Canada was signed to provide for the direct exchange of marketing information on dairy and poultry.

A headline in the Parkersburg (W. Va.) Sentinel one day in 1967 illustrated the importance of market news.

The headline read: "Fruit and Vegetable Reporters Indispensable." The story then went on to explain that, "Charles E. Rannells was sick one day and nobody knew the price of potatoes."

Rannells is a fruit and vegetable market reporter who provides information on the Pittsburgh, Pa., market for farmers and dealers in Pennsylvania, West Virginia, and Ohio. The wire services notified its customers that there would be no produce report that day and one newspaper editor remarked that Rannells is "probably the world's only indispensable man."

The very nature of a market news reporter's beat demands physical fitness. Rannells gets up at 4:30 a.m. five days a week. He is on duty at the produce yards from 6:00 to 9:30 a.m. He walks about three miles in the produce yards interviewing some 70 to 75 salesmen and visiting 25 wholesale stores and about 20 firms at the railroad terminal.

After his early morning news gathering stint, Rannells goes back to his office and compiles a report based on the information he has gathered, plus other data. He then dictates his report of market conditions. Shortly after noon the report is sent to all points by teletype. It is then mimeographed and distributed by messenger to local dealers, railroads, banks, and other interested parties.

Matching Fund Program

Many marketing problems occur at State and local levels. We attack these through projects proposed and carried out by State Departments of Agriculture, but approved and partially financed by USDA. During fiscal 1967, the Consumer and Marketing Service contributed $1,750,000 to help 44 States plan and carry out 171 marketing service projects. Under this program the States match Federal funds for cooperative projects aimed at improving product quality and developing more efficient marketing.

The quality of tomatoes in Indiana is improving, partly because of a project to acquaint processors and growers with the colorimeter method of grading. The colorimeter is a USDA-developed device for objectively determining tomato quality.

A Northeast Maple Conference Group was formed by Maine, Massachusetts, New Hampshire, New York, Pennsylvania, and Vermont to investigate uniform grades and standards, current inventory, consumer preferences, and new product research on maple products.

A regional grain quality survey is being conducted by Great Plains States to help expand grain markets.

Technical assistance, through a matching project, is being extended to Texas producer groups interested in organizing cooperatives.

Washington State initiated a project to provide technical assistance to any producer group wishing to improve its economic position through merchandising, promotion, or research programs.

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Information Vital for Farmer Decision Making

In this age of increasing dependence on timely and reliable statistical information, the USDA Statistical Reporting Service plays an essential role. SRS provides facts on production, supplies, and prices of agricultural commodities through about 700 reports each year. This information is based on 3 million reports submitted voluntarily by U.S. farmers and businessmen.

The first step in a long-range program to make SRS increasingly effective became fully operational in 1967 in the 48 conterminous States. Outlined before the Congress in 1957, the long-range program is intended to strengthen the agricultural estimating program. It is broken into four phases: A structure for providing improved State and national data; expanded agricultural price statistics; speedier release and distribution of reports; and additional data and services needed.

The first phase is now fully operational. However, users of agricultural statistics are always seeking higher levels of accuracy. Additional effort and resources may have to be directed toward this goal. The need for greater accuracy has been particularly emphasized by producers, handlers, and processors of cattle and hogs.

"POLICING" THE MARKET

USDA administers more regulatory laws and programs to protect the interests of farmers, marketers, and consumers than any other Government agency. Effective enforcement of these laws safeguards the public against product misrepresentation and unfair business practices. It also helps assure dependable food supplies and reasonable prices through orderly marketing.

The Perishable Agricultural Commodities Act encourages fair trade practices in marketing fresh and frozen fruits and vegetables. During fiscal 1967 USDA helped settle more than 2,100 informal reparation disputes, resulting in payments of about $2 million to those claiming injury. More than 300 formal orders were issued, requiring payments of about $825,000 to those making claims. In addition, 444 disciplinary cases—the majority of them misbranding violations—were settled.

Full conversion to an automated system for issuing and renewing PACA licenses reduced costs, increased efficiency, and speeded up service to the fruit and vegetable industry.

The Federal Seed Act, a truth-in-labeling law, was modernized by Congress to insure more informative seed labeling and better protection for buyers of farm and garden seed. Since we rely heavily upon the cooperation of State agencies to enforce this Act, cooperative agreements with 38 States were revised to provide for greater State assistance in reviewing shippers' records.

Licensing of public warehouses under the U.S. Warehouse Act continued to increase. Almost 1.5 billion bushels of grain storage capacity came under license. We made more frequent examinations of licensed cotton and grain warehouses.

Our transportation service program produced approximately $37 million in calculable savings to farmers and consumers. This resulted

from efforts by our transportation specialists in support of lower rate proposals.

Thus, we helped Louisiana and Texas poultry interests get lower freight costs on feed grains. We also participated in a railroad merger case before the Interstate Commerce Commission which could affect agricultural interests for decades.

During the year we established the *Packers and Stockyards Administration* as a separate agency in the Department. Previously the administration of the Packers and Stockyards Act had been carried on by a division in the Consumer and Marketing Service. Setting up a separate agency will enable us to maintain more effectively a free-open, and competitive marketing situation at all levels within the livestock, poultry, and meat industries.

P&SA annually regulates trade practices involving $14 billion worth of livestock, $18 billion worth of meat, and $4 billion worth of poultry.

During fiscal 1967, the agency handled 6,200 complaints of unfair practices and returned more than $2½ million in payments to 599 complainants.

These were the tangible returns; the intangible benefits mount far higher.

It is estimated that without regulations, livestock marketing rates could be twice as high as they are today without pricing such markets out of business.

Furthermore, our investigations and studies in cases of competition restriction indicate that producers get from 25 to 50 cents more per hundred pounds of livestock sold because of effective competition.

P&SA has two programs to encourage honest weights for livestock marketing—a mandatory, twice-yearly scale test, and a check weighing program which involves about 4 percent of the scales under P&SA jurisdiction each year.

The agency check-weighed livestock in 209 markets and buying stations in 35 States. It "spot checked" markets in 17 States to analyze marketing practices and obtain complaints through area or statewide meetings with market operators.

In total, the activities of P&SA, it is estimated, save U.S. farmers at least $275 million a year.

Commodity Exchange Authority

Producers and consumers look to the Commodity Exchange Authority to safeguard competitive pricing of wheat, corn, soybeans, potatoes, cotton, and 10 other agricultural commodities on large futures markets at Chicago, Minneapolis, Kansas City, and New York.

In regulating futures markets, CEA watches the daily transactions of large traders to prevent price manipulation, fraud, and other abusive practices prohibited under the Commodity Exchange Act.

Futures markets have expanded rapidly in recent years. In fiscal year 1967, for the fifth consecutive year, the volume of trading in regulated commodities set a new record. Trading in the 15 regulated commodities totaled 16.9 million transactions valued at $75 billion. Corn led the list with 13 billion bushels traded, followed by wheat with 10.4 billion bushels, and soybeans with 9.5 billion bushels.

STRENGTHENING FARM GROUP ACTION

From experience farmers have learned that in union there is strength. Cooperatives have long been a powerful force on the agricultural scene. Farmers annually increase their net incomes by at least $500 million through cooperative services. Five out of every six farmers now share ownership of the 8,400 marketing and purchasing cooperatives that help farmers process, package, and market their own production or reduce the cost of farm supplies and services.

Our Farmer Cooperative Service (FCS), in 1967 continued its work of helping farmers and other rural residents live better by using cooperatives more effectively. FCS conducted research, provided advisory services, assisted farmers and rural residents in improving the organization, operation, and management of their cooperatives, and aided low-income farmers in forming new co-ops.

Some 30 FCS studies in 1967 helped co-ops improve operations. One such study (cost $6,000) enabled a co-op to reduce expenses by $200,000 a year through changes in its distribution system.

Eight co-ops used an FCS economic analysis as the basis for their decision to begin constructing a $20 million grain export elevator. This elevator will enable farmers to sell directly to customers abroad, thus saving export handling margins on more than 100 million bushels of grain annually.

FCS found ways to improve co-op storage, handling, and transportation for Louisiana soybean producers. This can mean additional net income of up to $4 million annually by 1970.

Eight co-op livestock auctions wanted to know what returns they could expect from pooling calves. Our study showed pooling would be feasible at six of the eight, bringing producers additional net returns of $150,000 to $200,000 every year.

Another study for cotton farmers showed that central ginning through their cooperatives could reduce costs from $3 to $7 a bale.

The Extension Service also helps marketing and processing cooperatives improve their efficiency through workshops, seminars, and economic analyses.

More than 30,000 members of boards of directors and management personnel of cooperatives in 40 States have participated in Extension management training programs.

AID IN FARM EMERGENCIES

Special aid programs are necessary to help farmers survive the effects of natural disasters such as drought, floods, fires, hurricanes, tornadoes, and earthquakes.

Federal Crop Insurance

This protective service enables farmers by insuring their production expenses to put a floor under their losses from excessive moisture, drought, freeze, and other natural disasters.

High annual expenses and capital investments involved in modern farming make an insurance guarantee of production costs a critical need every year. Without it, some farmers hit by crop failure could not continue farming.

In the 1967 crop year farmers had more protection against crop failure than ever before. They paid about $43,700,000 in premiums for a record $780,000,000 of Federal Crop Insurance protection.

Federal Crop Insurance paid indemnities of more than $54,500,000, representing $1.25 paid for each $1.00 of premium.

The value of all-risk protection for cotton crop investments was graphically illustrated when crop disaster struck thousands of cotton farmers. Producers who protected their investment were paid nearly $13,000,000 in FCIC indemnities. Many, however, were unprotected. One such cotton grower said:

> "If I lose that," nodding toward his home, "and I'm sure that I'm going to, there ain't no way you can get me back in farming. And that's all I know. If I'd kept it (Federal Crop Insurance), I'd be able to keep this place. But at the time it seemed like money going down the drain."

Other Disaster Programs

Until Hurricane Beulah devastated large areas of Texas in September, natural disasters requiring emergency aid for farmers in 1967 were not extensive.

Several programs, administered by the Agricultural Stabilization and Conservation Service, are available to farmers when natural disasters strike. They provide direct aid for livestock when feed or forage stocks are reduced or destroyed and cost-sharing assistance to help repair and restore damaged facilities and land.

During 1967, 443 counties in 14 States used the program permitting haying and grazing on lands retired or diverted from crop production. In contrast, this program was used by 1,042 counties in 35 States a year earlier.

The livestock feed program was used in 265 counties in 20 States in 1967. Peak period of use was February, due in large part to the continuing drought in a number of Eastern States. From late September 1966 through June 30, 1967, more than 10 million bushels of CCC-owned feed grains were supplied to farmers at reduced prices in these 265 counties.

From the summer through the end of 1967, however, only 27 counties in 3 States used the livestock feed program and the total of feed grain supplies was only 67,000 bushels.

Cost-sharing conservation assistance was needed both because of floods and drought in 1967 and the after effects of the severe floods in previous years. Hurricane Beulah with torrential rains and devastating floods was the most spectacular natural disaster of the year. As of the end of 1967, current allocation for cost-sharing emergency conservation measures amounted to $14,731,254. This aid was being made available to farmers in 290 counties in 27 States.

In the wake of major loss from natural disaster farmers invariably need credit to rebuild and start operations again. In fiscal 1967 the Farmers Home Administration extended emergency loans to more than 22,000 farmers and ranchers in about 1,300 counties. These loans which helped farmers restore operations after damage by storms, flood, drought, freezes, and other natural disasters totaled almost $95 million.

In addition, USDA food was made available for emergency relief to disaster victims. Mass feeding was necessary in south Texas after Hurricane Beulah struck. About 4 million pounds of USDA donated foods, valued at $819,000, were moved into the area during the emergency and made available for mass feeding through various relief organizations. The Red Cross served 175,000 persons in 281 shelters in

24 counties. The Salvation Army reported serving 260,000 meals in their shelters in 30 cities.

Many USDA agencies spring into action in these emergencies. After Beulah, for example, crews from REA-financed telephone cooperatives from as far away as 300 miles rushed in to help restore telephone service. With the help of these outside crews, the Valley Telephone Cooperative at Raymondville, which was hardest hit and had most of its system under water, was able to restore full service within a few days.

The Soil Conservation Service sent planning parties into the flood damaged areas to survey damage and make recommendations for emergency technical assistance. Much damage to land and improvements was averted by the excellent functioning of six watershed protection and flood prevention projects that had been completed with USDA assistance. It is estimated that these structures prevented flood damage in excess of $500,000 in the city of Bishop and even more extensive damage to the city of Kennedy.

Although farmers have made marked progress in income in recent years, they still are not sharing equitably in the fruits of their achievements. In 1967 they received only about three-fifths as much total income per person as nonfarmers. The American farmer in 1967 produced more and got less.

Basically, the problem was overproduction of specific crops and livestock for which farmers lack production controls and therefore also lack bargaining power.

About 60 percent of farm cash receipts comes from the sale of crops and livestock not covered by farm programs. Thus, when farmers overproduce cattle, hogs, poultry, eggs, and many field and tree crops, they do not have a price support cushion such as exists for wheat, feed grains, cotton, and some other commodities.

In these "no program" areas the farmer essentially must go it alone. He is unable to bargain effectively because competition in the food industry is competition among the strong—and farmers presently are not strong.

Most of the food industry is concentrated in the hands of a relatively few firms. In the manufacture of breakfast cereals, for example, the top four firms have 85 percent of the business. Only 20 firms account for more than half of the output of the canning industry. And only 20 firms account for more than two-thirds of the output of the frozen products industry.

On the other hand, farmers are so numerous and their individual output so small that no one of them can exert much effort on total output or price.

Many farmers have turned to cooperatives and other group bargaining arrangements. Where production is regional and members of an association produce a substantial share of the total output, they have often achieved remarkable results through co-ops.

Milk producers have made considerable progress in developing bargaining and processing cooperatives. Through 1,200 of these cooperatives they market two-thirds of all the milk sold in the United States. In one-third of the Federal order markets, these co-ops have been able to negotiate prices higher than the minimum prices established under the orders.

To be effective a bargaining organization must control a large share of the product. Yet most important crops are produced in many States. This makes it geographically difficult for producers to get together. Then, too, farm commodities are highly mobile. They can be shipped quickly and economically over large distances.

Thus, a farm bargaining organization cannot easily achieve effective nationwide control over widely grown farm products.

For example, broiler growers have no centralized voice. More than 95 percent of all broilers are produced under contracts, mostly with feed companies and processors.

Similarly, a fairly small proportion of all cattlemen appear to be active in organizations that specifically represent the cattle industry. In recent years farmer cooperatives marketed only 12 to 15 percent of the cattle.

Is this disorganization among broiler and livestock producers inevitable? Is organization impossible?

We do not think so. Times are changing. Communication is improving. More farmers now see more clearly than ever before what their lack of market power is doing to them. They see that in an economy marked by increasing organization of labor, of business, and of virtually all economic groups, they are the least effectively organized of all. Farmers today have a strong psychological drive to achieve more control over their economic destiny.

The USDA in 1967 made a vigorous effort to help the American farmer develop bargaining machinery that will give him power equal to the forces he must deal with in the marketplace. This effort involved painstaking study of the history of farmer group action, conditions existing in the marketplace, trade practices that prevail in marketing various agricultural commodities, and the need to organize farm production to fit market requirements.

We examined commodity after commodity to determine what kind of organization and bargaining machinery would be best adapted.

It remains to be seen whether farmers can work together to bargain effectively. If, as we believe, this is truly an idea whose time has come—they will.

THE SECOND GOAL: GROWING NATIONS—NEW MARKETS

Much progress was made in 1967 toward our goal of Growing Nations—New Markets. Starting from a decidedly bleak outlook in 1966, the world food situation was much improved by the end of 1967. It was not only a year of record agricultural production for the world, but most significantly a banner year for the less developed countries.

In 1966 per capita agricultural output in the less developed nations had fallen to 98 percent of the 1957–59 average and was 4 percent below 1965. The decline was sharpest in India where two successive years of widespread drought had caused a drop in per capita production of 15 percent between 1964 and 1966.

In 1967, however, per capita agricultural production in India bounced back to a level 4 percent above 1957–59 and almost 17 percent above 1966.

For all the less developed countries, excluding Communist Asia, per capita production increased by 6 percent to an all-time high. The rise in food production was even larger than in total agricultural output. In particular, most of the developing countries with large populations—India, Pakistan, and Brazil—made big gains in the production of grain and other foods.

The world food problem is far from solved. It will not be solved until the agricultures of the developing nations have been greatly improved. But the edge of the impending crisis has been blunted, at least temporarily.

The situation is hopeful also in that a world approach is now beginning to be taken toward the world food problem. We see this in the India Aid Consortium, the U.N. World Food Program, and the proposed International Grains Arrangement.

An important corner in the War on Hunger was turned when Public Law 480 was devised in the fall of 1966. The Food for Peace program had saved millions from starvation. But now we have a new Food for Freedom program which clearly recognizes that the War on Hunger must be waged, and won, where hunger is, and that it must be waged by all nations, the developed and the developing alike.

The principle of self-help has now been clearly written and plainly established in our Food for Freedom effort. Every P.L. 480 agreement signed since January 1, 1967, has contained self-help provisions aimed at clearing the way for improved farm production in each recipient country—and the provisions have been agreed to by each country. The result is that U.S. food aid, once regarded as a crutch to lean on, is now becoming more and more a tool to work with.

It is too early to evaluate the full impact of the self-help agreements, but we know they will have effect. India, for example, has sharply increased spending for agricultural development and has greatly expanded the use of improved high-yielding seed as well as the availability of fertilizer in the past year or two.

The USDA in 1967, then, became more deeply involved than ever before in helping the world meet the food-people challenge. In its broadest aspects of course, this challenge involves relations not only with the developing countries but with the developed nations as well.

The emerging countries want more and better food to wipe out hunger and malnutrition. They need to boost their agricultures to a level which will lay the foundation for improved health and increased vigor among their people and provide a base for a growing economy. The developed nations, on the other hand, seek to upgrade their diets as an important element in achieving higher standards of living. Both these objectives require heavy reliance on American agriculture and the USDA.

EXPORTS

In calendar 1967 exports of U.S. farm products, at $6,386 million, were 7 percent short of the 1966 record level. But they were still 3 percent above the 1965 total and 13 percent above the 1961–65 average. Thus the high level of recent years has been maintained. (For fiscal 1967, the total was a record high 6.8 billion.)

The value of our exports of grains and preparations, animals and animal products, and fruits and vegetables fell in 1967. However, oilseeds and products, cotton, and tobacco increased, and rice exports for the year rose to a record high, due partly to increased shipments to South Vietnam.

Major Markets

While the European Economic Community, as a bloc, continues to be the largest market for U.S. agricultural commodities, Japan is our best single customer. Our exports to the EEC declined 7 percent, to $1,460 million, in 1967. Commodities subject to the EEC system of variable levies dropped $115 million, while others increased $13 million.

U.S. exports of feed grains, subject to variable levies, contributed sizably to the net decline. However, variable levies themselves were probably not as significant as very good yields within EEC countries and in other countries that compete with us in this market.

U.S. agricultural exports to Japan were valued at $865 million in 1967. During 1967, Japan was the largest single commercial buyer of U.S. wheat.

Our studies indicate that the Japanese market for imported farm products will continue to grow rapidly, and we have the opportunity to share fully in this growth. Competition, of course, varies widely by commodities. Cotton competition has grown increasingly keen. U.S. soybean producers face limited competition from only one other producer—mainland China—but other sources of oil and meal are unimportant competitors. Feed grains have outstanding export expansion possibilities. Demand has multiplied several times in recent years to meet the needs of Japan's rapidly expanding poultry and livestock industries.

In 1967 we exported overall:

690 million bushels of wheat and flour—about half of our wheat production.
41 million bags of milled rice—about two-thirds of our rice production.
20.3 million metric tons of feed grain—14 percent of our production.
4.0 million bales of cotton—about half of our production.
572 million pounds of tobacco—more than one-fourth of our production.

In addition, we exported about 1¼ billion dollars worth of oilseeds and oilseed products—now our number one dollar earner in world trade. Exports of oilseeds and products have almost tripled in the past

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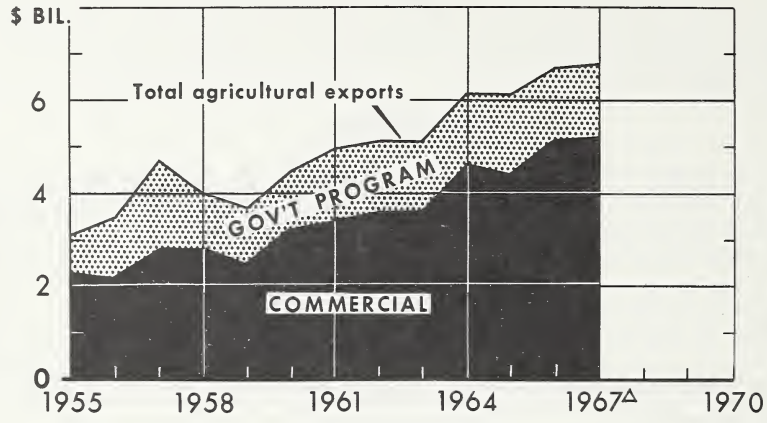
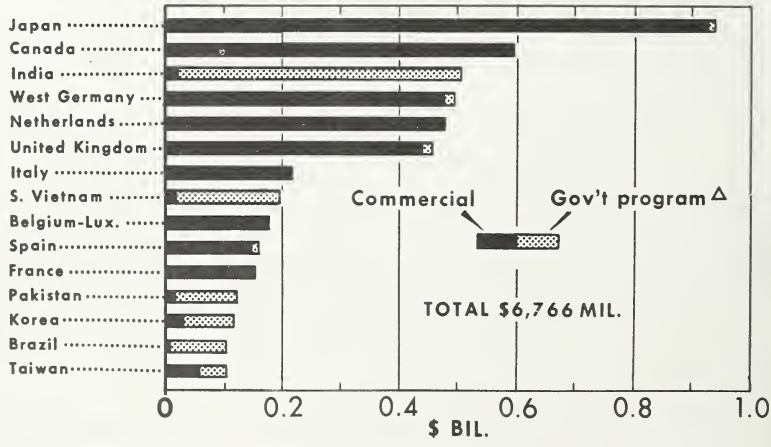
U.S. AGRICULTURAL EXPORTS: COMMERCIAL AND UNDER GOVERNMENT PROGRAMS



U.S. DEPARTMENT OF AGRICULTURE NEG. ERS 5366-67 (9) ECONOMIC RESEARCH SERVICE

U.S. AGRICULTURAL EXPORTS, BY COUNTRY, 1967*



DATA NOT ADJUSTED FOR INTRANSIT SHIPMENTS; U.S. SHIPMENTS THROUGH CANADIAN PORTS, FOR EXAMPLE, WERE $116 MILLION. △GOVERNMENT-FINANCED PROGRAMS, P.L. 83-480 AND P.L. 87-195. *YEAR ENDING JUNE 30.

U. S. DEPARTMENT OF AGRICULTURE NEG. ERS 5340-67 (9) ECONOMIC RESEARCH SERVICE

10 years. Exports of feed grains, our second biggest dollar earner, also exceed a billion dollars per year and three times the value of 10 years ago.

Other big dollar-earners in 1967 were animals and animal products with sales of over $700 million; fruits and vegetables with sales of $474 million; unmanufactured tobacco, $498 million; and cotton, $464 million.

Total commercial exports were $4.8 billion, and they accounted for more than three-fourths of the value of all U.S. agricultural exports. Exports under the Food for Freedom program amounted to $1,537 million, with wheat and flour making up more than 40 percent of this total.

It is interesting to note that of the total gain in exports of $1.6 billion between 1960 and 1967, $1.5 billion has been accounted for by commercial or dollar sales. This sharp rise in agricultural exports, and particularly in dollar sales, is directly related to the improvement that has been taking place in the economies of the countries we sell to.

The rapid economic growth of Western Europe and Japan, as well as growth in a number of other areas around the world, is enabling people to eat better. Higher per capita incomes sharpened the demand for livestock products, thus boosting sales of U.S. feed grains, soybeans, oilcake, and meal. Higher incomes also created substantial demands for U.S. hides and skins, fruits and vegetables, and variety meats.

But our sharp expansion in exports has by no means been an automatic process. We have worked hard and with some success to improve our access to foreign markets and take advantage of their increased buying power. And we have worked hard and with considerable success to carry out market development and sales promotion programs in these markets.

Market Development

An aggressive market development program has been a major factor in building U.S. agricultural exports to record levels.

The market development program is carried out largely in Western Europe and Japan—our major dollar markets—and is financed with converted currencies obtained under foreign currency sales agreements. In 1967, all of the government's overseas market development expenditures were met with currencies generated by Public Law 480.

More than 60 nonprofit agricultural trade organizations worked with the Department, either under continuing agreements or through special arrangements. New organizations representing pea and lentil growers, peanut producers and the softwood plywood industry became active. All the major agricultural export commodities are now represented in the program.

Participating organizations put substantial funds, manpower, and know-how into the program. Government expenditures for market development in 1967 amounted to $13 million, matched by industry contributions of substantially the same amount.

One market development cooperator, the Cotton Council International, led the way in forming the International Institute for Cotton, an 8-nation organization which has launched a large-scale promotional program to help cotton compete with man-made fibers.

Several State governments increased their market development activity. A dozen States participated in USDA-sponsored food exhibits

America's largest tanker loading 100,000 tons of wheat.

Promoting U.S. food in a German supermarket.

at trade shows abroad during fiscal 1967. Even more expected to participate at the major exhibit in Tokyo during the spring of 1968.

We increased our emphasis on retail food store promotions in leading cities of the world and we have begun working with international hotel chains to use and promote use of U.S. foods abroad. An experimental start has also been made on cooperation with individual firms in private brand promotion.

Along with cooperating organizations, we are following closely such technological developments as containerized shipments, which move cargo directly from a processing plant to the wholesale outlet abroad in a sealed unit that protects the shipment against damage and loss. Air cargo developments may expand markets for farm products, especially fresh fruits.

Agricultural Attachés

Our Foreign Agricultural Service has attachés stationed in 59 countries representing the major export markets for U.S. agricultural commodities. Some of these posts, however, serve two or more countries, and our total coverage is 113 countries. We have 22 posts in Europe, 16 in Western Hemisphere, 11 in the Near East and Africa, and 10 in the Far East and South Asia.

The agricultural attachés form the core of an agricultural intelligence system designed to help American exporters sell abroad; to help importers buy complementary commodities; and to identify potential markets for development in close cooperation with U.S. private commodity organizations. In 1967 our attachés forwarded to Washington 1,976 scheduled reports, and 4,900 spot news (unscheduled) reports on foreign agriculture.

Several international organizations, as well as foreign governments, rely heavily upon agricultural attaché reports. The International Coffee Agreement sets export and import quotas on the basis of world coffee estimates prepared from these reports. The International Grains Arrangement makes use of attaché intelligence to move billions of bushels of wheat into world granaries, protecting both buyers and sellers. Information based on attaché reports is vital to USDA administration of the U.S. Sugar Act of 1965. In addition, the reports constitute an integral part of the Semi-Annual Evaluation Report on Sugar.

Market development activities of the agricultural attachés range from providing liaison for U.S. agri-businessmen to helping conduct food and agricultural exhibitions which attract world-wide attention.

Sustained efforts by the agricultural attachés helped conclude sales of 720 calves to Greece and 1,200 Hereford breeding animals to Portugal. Both countries hold the promise of larger markets in the future.

The combined efforts of the Office of the Agricultural Attaché and Wheat Associates, Inc., a market development cooperator, helped push U.S. wheat to a dominating position in the Philippine market during 1966 and 1967. By the closing months of 1966 we were providing nearly 90 percent of the Philippines' total wheat requirements. Similar efforts increased sales of U.S. cotton to the Philippines from 82.5 thousand bales in 1965 to 105,000 bales in 1967.

Joint endeavor by the agricultural attache office and Great Plains Wheat was instrumental in increasing U.S. wheat sales to South Africa from 148,000 metric tons in 1962–63 to 358,000 metric tons in 1966–67.

TRADE LIBERALIZATION

Working closely with the Office of Special Representative for Trade Negotiations and the Department of State, we continued to improve access for U.S. agricultural products to foreign markets.

The Kennedy Round

This was done through representations to foreign governments and through participation in the Kennedy Round of trade negotiations with other countries and regional groups such as the European Economic Community.

The United Kingdom eliminated restrictions on grapefruit.

Denmark, Finland, Norway, and France eliminated restrictions on a number of agricultural products, including canned asparagus (Denmark and France), canned fruits and vegetables (Norway), and pineapple juice (France).

Japan agreed to liberalize quota restrictions on grapefruit, tomato juice, tobacco, and soybean meal beginning January 1, 1968.

Canada eliminated a restriction prohibiting imports of fresh fruits and vegetables in three-quarter bushel baskets and will liberalize restrictions on milling by-products.

New trading opportunities for U.S. farmers should result from the reduction of barriers to agricultural trade under the Kennedy Round which concluded during the summer of 1967. Through a World Grains Arrangement guaranteeing higher minimum-maximum trading prices, we will share with other nations, both exporting and importing countries, the task of supplying 4½ million tons of food aid in the form of grain for human consumption to the less developed countries. The United States will provide almost 1.9 million tons, or 42 percent.

However, the nations were unable to arrive at multilateral agreement with respect to negotiations for establishing international arrangements for meats and dairy products.

We received concessions of considerable value to our trade in fruits and vegetables, oilseeds, tobacco, variety meats, tallow, and a number of other products. On the basis of trade coverage, the United States received concessions from its principal negotiating partners on over $860 million of agricultural exports, excluding grains. Although the European Economic Community made tariff cuts on items of trade value totaling more than $200 million, no progress was made in negotiating down the trade restrictive effects of the EEC's variable levy system.

These negotiations are extremely difficult, largely because agricultural trade is impeded by conflicting national price and income and other support policies. We are continuing our efforts to improve access for our agricultural products in foreign markets.

Import Problems

Virtually every government uses price and income and other support programs to meet special agricultural problems. We use them too, but cautiously, because they can have severe repercussions on trade.

Before instituting controls we apply three pragmatic tests: Is there a clear and present need for additional protection? Does the protective instrument chosen fit the need? Will the benefit to producers outweigh the dollars and cents cost of lost exports?

After applying these tests to the dairy situation we moved to restrict dairy imports during 1967.

Because of systems of high dairy support prices, protected by strict import controls, dairy production in some foreign countries had increased to the point where heavy surpluses glutted their markets. Under such circumstances in the EEC, for example, an export program operates authmatically to move out the surpluses at distress prices. Beginning in early 1966, increasing quantities of butter entered the U.S. as a butterfat-sugar mixture in circumvention of U.S. controls. Colby cheese came in in the same way, through a loophole in our tariff schedule.

Our domestic milk production was down, however, and about a year passed before prices dropped and the CCC had to begin heavy purchases.

As soon as it was clear that heavy buying was going to continue, we moved to bring dairy imports under full control—specifically, to halt evasions of the import quotas established under Section 22 of the Agricultural Adjustment Act, as amended.

Presidential Proclamation 3790, issued June 30, 1967, put import quotas on those items which had accounted for virtually all of the import upsurge. Our purpose was to bring total dairy products imports back to the level which had previously prevailed, a level equal to less than 1 percent of our domestic dairy production.

The successful application of Section 22 demonstrates that import problems can be kept under control using the legislation we now have.

Importance of Farm Exports

An expanding foreign market helps not farmers, but labor, industry, and the whole nation. Obviously, farmers benefit from a multibillion dollar export market.

But American workers also profit by it. A few years ago, the Labor Department estimated that besides nearly a million *farm* workers engaged in producing farm products for export, at least another million worked in agriculture-related jobs—truckers, railroaders, warehousemen, processors, ginners, stevedores, and merchant seamen.

U.S. industry gains, too. Railroads, truck lines, elevators, processing plants, cotton gins, port facilities, steamship lines, all reap an expansion of business from our farm exports.

The entire economy benefits from our agricultural exports. Trade in farm products, though it makes up only 21 percent of our total exports, accounts for half of our favorable trade balance—that is, the excess of total merchandise exports over total imports. Most importantly, we're getting valuable balance-of-payments help. In the 7 calendar years 1961–67, farm product shipments brought back to the United States a total of almost $33 billion. Without these exports our payments deficit—incurred by overseas expenditures for goods, services, travel, investment, and military and economic aid—would have been $33 billion larger during these 7 years.

FOOD AID

Aid provided to less developed nations under our Food for Freedom program during 1967 continued at roughly the level of the past several years—$1.5 billion. About $19 billion worth of agricultural products

moved under the P.L. 480 program from its beginning in 1954 through December 1967. Aid has been given to 116 countries which together contain almost half of the world's population.

Wheat continues to be the major Food for Freedom commodity. The 9.3 million metric tons shipped in 1967 brought the total for this food grain during the life of the program to 130 million metric tons.

Among other major commodities shipped under Government programs in 1967 were grain sorghums, 2.2 million metric tons; corn, 1.1 million metric tons; rice, 786,000 metric tons; soybean oil, 479,000 metric tons; and inedible tallow, 135,000 metric tons.

Studies by our Economic Research Service on the effects of P.L. 480 reveal that recipient countries have generally programmed and managed imported commodities to prevent discouragement of domestic output. A common technique has been for governments to sell these imports at domestic prices, which usually are considerably above prices of the imports, and to use the resulting revenues to finance their own farm programs. Some countries have priced P.L. 480 feed grain imports below cost to encourage livestock output. The availability of P.L. 480 commodities has generally aided governments to manage and stabilize prices within national policy objectives. It has also made possible early abandonment of commodity rationing, and price and market controls.

New Food for Freedom Program

Recognizing that the only long-term solution for the less developed countries is vigorous self-help, Congress enacted legislation requiring all sales agreements signed beginning January 1, 1967, to contain specific self-help provisions. Sales agreements are now made only after carefully considering what practicable self-help measures are being taken by the recipient country to improve its own capacity to provide food for its people.

The following additional special requirements of the Food for Peace Act of 1966 have also changed the emphasis of portions of the food aid program:

U.S. food aid shipments are now made up of commodities that are available, not necessarily those that are surplus.

Our goal is to move from sales of U.S. farm products for local currencies to purchases for dollars, or with dollar credits, by the end of 1971.

Additional stress is being placed, especially in donation programs, on foods for children that meet their requirements of proteins, minerals, and vitamins.

We are relating food assistance more closely to current needs and technical assistance to helping a country take care of its future needs. In countries showing a willingness to give high priority to food production improvement, we are reinforcing self-help efforts with technical and scientific support from USDA, Land-Grant Universities, and private agricultural resources.

The new program authorizes on a request basis the use of foreign currencies from export sales in support of programs of family planning.

As many countries as possible are being encouraged to contribute their products, finances, services, and talents to solve world food problems. The new program supports the expansion of international food and agricultural assistance programs, including the U.N. World Food Program.

In 1967, 22 nations entered into 44 agreements, providing for the sale of $1.2 billion worth of U.S. agricultural commodities. This was

the first year during the 13½-year-old program that India, Pakistan, and some other nations which had purchased P.L. 480 commodities for their local currencies only, signed agreements calling for partial payment on credit terms.

Developing Economies Provide Growing Markets

A strong relationship exists between the economic growth of foreign countries and U.S commercial exports of agricultural products. From 1957 to 1964, our biggest absolute gains in commercial exports were made in high-income countries. But the percentage gain in their imports from us was only 7.8 percent for each 10 percent increase in income. For medium-income countries, the percent of increase in imports and income was about the same. In low-income countries, however, imports increased around 25 percent for each 10 percent rise in incomes. This indicates the stake our agriculture has in the economic growth of developing nations.

There is clear evidence of progress. Nations that once depended substantially on aid are now able to turn increasingly to commercial trade to meet their needs.

In fiscal 1962, Israel got 166,000 tons of wheat from the U.S. under P.L. 480 and bought 105,000 tons commercially. By 1967, the P.L. 480 shipments had been cut in half and Israel's commercial buying had been increased by almost half.

During this same period South Korea's P.L. 480 wheat imports dropped slightly from 337,000 tons to 331,000 while its commercial imports increased thirteen-fold, from 26,000 tons to 341,000 tons.

Taiwan's P.L. 480 wheat imports dropped from 325,000 tons to zero. Its commercial buying from us went up from 9,000 tons to 280,000 tons.

DEVELOPMENT AID

Agricultural development in the "have-not" nations is an essential step both toward improving nutrition and toward achieving the vigorous economic activity such countries must have if they are to become good customers in the world market. As agricultural development occurs, it becomes a foundation on which broad economic growth can be built. Subsistence farmers become paying customers. New agribusiness activity provides jobs and income for city people, replacing doles and breadlines with paychecks and markets. Emerging countries get off dead-center and begin to take their place with the developed nations. And, economic progress is an important requisite to world peace.

The USDA has a vast reservoir of know-how and resources to help bring this about. Among more than 29,000 professional personnel can be found the entire spectrum of agricultural skills known to man. Programs carried out jointly by the Agency for International Development and USDA tap this tremendous store of knowledge to fight the War on Hunger in the developing nations of Latin America, Africa, and Asia.

In many less developed countries, the fertility of the people, plus slowly rising per capita income, are outrunning land productivity. We are encouraging these countries to put high priority on agricultural development.

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Over 370 experts from 17 USDA agencies worked in 35 developing nations during 1967 on AID-financed programs. Our International Agricultural Development Service helps AID plan agricultural development and coordinates USDA assistance to the emerging countries.

During 1967, some 20 developing nations received food aid from the United States under "self-help" agreements. Under these "commodities for commitments" contracts, the recipient nations agree to take specific steps to improve agriculture.

Pakistan, for example, is attempting to attract more foreign private capital, as well as technical and management know-how, for producing and distributing badly needed agricultural supplies. Special emphasis is being given to speeding up construction of fertilizer and pesticide plants.

India, among other self-help commitments, plans to make available 2.2 million tons of fertilizer to her farmers in the 1967–68 crop year, up 65 percent over the previous year, and 175 percent more than two years earlier. And, importantly, India increased her government budget for agricultural development by more than one-third last year.

In Ghana, construction of farm-to-market roads heads the self-help list.

The Sudan will expand cultivated acreage in irrigated and high rainfall areas for food production, and will encourage private enterprise to invest in food marketing and distribution systems.

Paraguay plans to increase domestic wheat production 20 percent each year for the next five years. The program emphasizes increased distribution of improved seed varieties to growers, incentive prices to farmers, and farm production credit.

The *Indonesian* government is committed to a program of farmer education, farm credit, distribution of fertilizers and improved seeds, price incentives, and farm-to-market roads.

Insuring the Future

Many developing nations, anxious to get agriculture "moving," have asked USDA and AID to help them set up farmer education services, farm credit systems, conservation services, and agricultural research institutions.

Four USDA Soil Conservation Service specialists are now working in Mysore State, India. Plans are underway to send SCS specialists to other Indian states in 1968.

As of June 30, 1967—SCS was providing assistance in the following countries beside India—Brazil, Ecuador, Nicaragua, Nigeria, Thailand, Tunisia, and Vietnam. SCS had a total of 30 employees working in eight countries at the year's end.

Fourty-four U.S. agriculturists, many of them former county agricultural agents in the United States, at year end were in Vietnam showing Vietnamese farmers how to produce more with fertilizers, improved seed, and pesticides. Forty-one other USDA specialists are advising the Vietnamese government on national agricultural programs.

Five USDA Farmers Home Admistration credit specialists helped *Nigeria* establish a more effective farm credit program. This is aiding Nigerian farmers to buy what they need to increase yields.

Among its other accomplishments, the 16-man USDA team in *Brazil* helped establish a farm market news sytem. The team is also assisting

the government and farmers in setting up price incentive programs, agricultural credit, cooperatives, and other agricultural aids. One group is helping Brazil to explore and settle its vast interior.

Cooperatives offer the developing nations opportunity to raise living standards and achieve more "people control" over the marketing of farm products and purchases of farm supplies.

Over 600 persons from abroad came to the United States in 1967 to see how our farmers operate their co-ops here and how the USDA assists them.

Our FCS sent specialists to foreign countries to help set up co-op programs. We also shipped abroad about 700 sets of co-op educational materials in response to requests from individuals and institutions in emerging countries.

Training for Self-Help

The developing nations lack trained manpower. They need researchers, teachers, administrators, to help get agriculture moving.

Through foreign training we strive to fill a part of the manpower gap.

We emphasize techniques that will enable the trainee to go home and teach others.

With the help of Land Grant Universities, foundations, and private industry, we trained 4,206 agriculturists, over half of them AID-sponsored, in 1967. Over 500 private U.S. companies assisted in the training and thousands of American families helped introduce the overseas farm experts to U.S. agriculture and rural life.

Teams from *Jordan*, *Afghanistan*, and *Turkey* came for practical instruction in use of fertilizers, insecticides, machinery, and improved seed varieties. We gave them a short, concentrated training course to enable them to lead their nations in programs to produce more wheat.

Groups of *Brazilians* came to study the USDA farm market news system. They went home prepared to operate the new Brazilian market news network.

A *Nigerian* agriculturist came to study storage methods so that he could help his nation save grain lost to rats, insects, and weather. From one-fourth to one-third of Nigeria's grain is lost this way. He learned from two U.S. storage equipment manufacturers how to build and install storage equipment on the farm.

USDA Research Aids Developing Countries

Several major Agricultural Research Service projects financed by AID are increasing food production in developing nations.

In *India* and *Iran*, scientists have helped raise yields of protein-rich pulse crops (beans, peas, lentils) by as much as 40 percent over traditional varieties. For South Asian countries, where people eat little meat, these crops are major nutrient sources. Our researchers aim to develop pulse varieties resistant to disease and insects, and also to teach local agricultural leaders better cultivation methods which they in turn will pass on.

With ARS help, farmers in Kenya's best corn-growing locations are changing from traditional corn varieties to high-yielding hybrids as rapidly as U.S. Corn Belt farmers did when hybrids first appeared in

the United States. In Kenyan areas where the hybrids are adapted to growing conditions, these are now planted on about 25 percent of the corn acreage. One hybrid gives yields of 80 bushels per acre, compared with about 12 bushels for traditionally grown strains.

Hybrid seed corn was first offered for sale to Kenyan farmers in 1963; they planted about 400 acres. From 1963 to 1966, the increase in hybrid corn acreage kept pace with seed availability; farmers took all there was. In 1967, an estimated 300,000 acres were planted, 200,000 of which were grown by small farmers. Kenyans last year, for the first time in history, became self-sufficient in corn production. The Kenya corn improvement program is an example of excellent international cooperation between the Kenya Government, USDA, AID, Great Britain, and the Rockefeller Foundation.

Another project seeks to wipe out the African tsetse fly, carrier of the dread sleeping sickness which affects humans and animals. ARS and African researchers are developing a method of sterilizing male tsetse flies by the millions. The sterile males will mate with normal females. Ineffective breeding will reduce and could eventually eliminate the fly population.

ARS and African researchers in Kenya are studying contagious bovine pleuro-pneumonia, killer of thousands of cattle annually in the protein-hungry nations of Africa and Asia. The goal is to develop a vaccine to curb the disease.

Governments, Private Enterprise Combat Malnutrition

There is reason to believe that improving the protein quality in existing foods may help reduce malnutrition in less developed countries as much as increasing food production. In this connection we are emphasizing: (1) Fortification of cereal grains with lysine and other essential amino acids to increase quality of the protein, and (2) development of new protein foods from low-cost protein sources such as oilseed crops.

Demonstration projects looking toward the possibility of fortifying cereal foods are being planned in India, Tunisia, Peru, and elsewhere. With AID and USDA assistance, India is working on a program to fortify foods with lysine and vitamins.

With U.S. encouragement, the Indian Government bakeries in Madras and Bombay recently began marketing a lysine-fortified product called Modern Bread. Early reports indicated that it was selling out every day.

Private industry both here and abroad is playing an aggressive role in producing and demonstrating lysine for food fortification in protein-short nations. The Dutch State Mines Company of the Netherlands and a German church organization cooperated during the year in making the first shipment of lysine fortified wheat flour to India. Dutch State Mines is also sponsoring and financing a demonstration of lysine fortification of wheat in Iran. Two Japanese companies are sponsoring rice fortification demonstrations in Japan.

We have helped AID develop a program to assist industry to design new protein foods for protein-short countries. Under this program, AID has made grants for food research to the Pillsbury Company in El Salvador; the Krause Milling Company (Brazil); Monsanto Inc., (Brazil); Swift & Company (Brazil); and International Milling Company (Tunisia). Some of these firms will begin production of new

protein foods and beverages in 1968. Six more such AID/industry contracts are expected in 1968.

Our scientists have found that tempeh, a high-protein food of Indonesia, can be made from cereal grains as well as from the traditional soybeans. This should give it wider appeal throughout the world. Besides bolstering diets in protein-short regions, tempeh may take its place as a new convenience product here in the United States. Researchers have made it into tasty chips, crackers and other snack items.

Our researchers have analyzed the protein content of thousands of wild and domestic plants in their search for new sources of food. To date, they have found about 400 plants, many of them growing wild, that contain most of the amino acids required by man.

A wild oat species introduced into this country from the Mediterranean region boasts a protein content of 30 percent, nearly double that of ordinary oats. Although the wild species cannot be cultivated, it appears to cross readily with other species. If it can be successfully crossed, our scientists may produce a hybrid surpassing all known plants in production of protein per acre.

AID-financed research at our Peoria and New Orleans laboratories is developing techniques which protein-poor countries can use to process their oilseeds (soybeans, cottonseed, peanuts, and others) into inexpensive protein-rich human food. Oilseed proteins of high nutritional value are produced in the developing countries, but are not generally used for human food. Oilseeds alone could furnish 25 million tons of protein, as much as man presently secures from animals. Recent ARS research shows that cottonseed is a potential source of about 8 million tons of edible protein.

Finding the "Why" of Agricultural Progress

Research in developing countries is producing ways to measure the factors that lead to success—or failure—in their agricultural economies. Work in Greece, Taiwan, and Mexico—of the seven countries that are being studied intensively—is already nearing completion.

In these three, national growth is now self-sustaining, without major external assistance. The three countries all had coordinated and well organized approaches to development of the agricultural sector with these elements in common:

—Appropriate technologies available based on adaptive research.
—Favorably administered product-input price relationships to provide incentives.
—Adequate supplies of the inputs required by the new technologies.
—Effective extension programs for farmer education.

Their differences were related to the basic physical resources available and to their political, social, and cultural histories. Greece and Taiwan had little land yet to be developed. They increased production mostly by replacing traditional methods with improved technologies. In addition to better technical and cultural means, Mexico also materially increased the amount of land under cultivation.

WORLD FOOD OUTLOOK

Encouraging signs appeared during 1967 that the tide in the war against hunger could be turning in man's favor.

The consensus of the growing number of responsible persons and groups from many areas giving attention to the world food problem is not only that the problem can be solved and mass famine avoided but also that the well-being of the millions of persons living at a subsistence level can be improved.

To assess world capacity to meet food needs, particularly in less developed countries, our Economic Research Service made a special study of world production, consumption, and trade in 1980 under alternative economic growth assumptions.

The study shows that the world will have ample grain output capacity through 1980. Productive capacity in the developed nations could easily meet the import needs of less developed countries, even if their own growth rates in production do not rise. The world food problem is basically one of disparity of food production and food availability between the developed and developing nations. The proportion of the capacity of developed countries which will be used will depend on production and trade prospects and government policies.

This study confirms the conclusion that the solution of the food problem in less developed importing countries is to increase their own food production.

No agricultural programs of the past 7 years have been more important than those designed to expand U.S. farm exports and help the developing nations improve their agricultures and start up the ladder of economic growth. Though the battle is still far from won, great progress clearly has been made. We know now, though the task is massive and the road to victory long, the War on Hunger can be won.

THE THIRD GOAL: COMMUNITIES OF TOMORROW

For too many years too many Americans, attracted by the hope, often the illusion, of greater opportunity, have crowded themselves into the central cities of the United States.

Over 70 percent of our people now live on two percent of our land. Some cities are so congested it takes longer to cross town by car than it used to take by horse and buggy. Noise, tension, pollution of air and water, crime, unemployment, and rising welfare costs threaten to become unbearable.

In the countryside, on the other hand, many villages, towns, and small cities are being drained of people and economic vigor.

Year after year, hundreds of thousands of "dropouts" from rural America—small farmers, farm workers, displaced miners, shopkeepers, laid-off railroad workers, and youth—have left the countryside to seek what they thought were greener pastures in the cities. Often their leaving both added to the problems of the cities and impoverished the countryside. Rural America, with less than 30 percent of the nation's population, has nearly half of the nation's poor.

Though the exodus is slowing, it is still going on. The space-starved city and the opportunity-starved rural community are not two isolated phenomena. They are twin symptoms of a fundamental rural-urban imbalance which has resulted in large part from the deterioration of rural America.

This is a problem we must solve—for the sake of city and country alike. We must restore rural-urban balance in America.

Rural-urban balance will be restored only when new economic, social, and cultural opportunities are opened up throughout rural America—only when underemployed small farmers and displaced workers can find adequate economic opportunities—only when private enterprise is attracted to the countryside by the obvious advantages of open space, ample labor, and low-cost buildings—only when rural communities can offer modern water supplies, good housing, and other facilities—only when we establish vigorous, healthy Town and Country communities.

We have made a start in all these areas—and a good start in some of them.

BETTER FARMING

Farming and farm related industries historically have been the economic backbone of rural communities. Although farm occupations now make up only about one-fifth of all jobs in rural America, the farm is still the foremost economic institution in the American countryside.

American farmers have made substantial income progress in the past 7 years. Nevertheless, more than half of the Nation's farms fail to provide their operators an adequate scale of family living without other sources of income. An important part of the nation's rural development effort, therefore, must consist of programs aimed at improving the economic position of American farms and farm families.

Supervised Credit an Effective Tool

The supervised credit provided by our Farmers Home Administration gives thousands of low-income, underemployed farmers the lift they need. FHA provides credit for those who are unable to borrow from commercial sources. But in addition it helps its borrowers make and carry out annual and longterm development plans. FHA county supervisors study and review the entire farming operation of individual borrowers—not only the production aspects, but marketing, farm and household expenditures, provisions for loan repayment, and other details that make the difference between success and failure.

The Farmers Home Administration caseload as of June 30, 1967, included more than 245,000 individual loans. This represents a massive effort to help disadvantaged rural people move up the economic ladder.

During fiscal 1967 alone, FHA advanced a record $260 million to 13,987 families, enabling them to buy, develop, and enlarge farms or to refinance debts. Private sources provided the funds for nearly all of these loans on an FHA-insured basis.

Altogether there were more than 93,000 farm ownership loans outstanding as of June 30, 1967. Without this credit, thousands of small farm families would have been forced to abandon the land and swell the migration of distressed rural people to the cities. Instead, remaining on the farm, they will forge ahead as self-reliant members of the nation's agriculture force. A survey covering a recent 5-year period shows that farm ownership borrowers raised their average gross cash incomes from $10,115 to $18,565 a year.

Farm Operating Loans

We extended operating loans totaling $300,313,503 to 64,946 family farmers in fiscal 1967. Including credit advanced in prior years, approximately 95,600 operating loans were in effect as of June 30, 1967. Family farmers used these funds to meet their needs for livestock, machinery, seed, feed, and other equipment and supplies, pasture improvement, fencing and other minor real estate improvements, and refinancing of debts.

> Three years ago Edward L. Garris, then 28, a capable farmer who wanted to make farming his career, was about ready to give up and look for another job. Farming on a sharecrop basis in North Carolina, he was netting only about $2,000 a year from his gross farm income of $10,000—far too little to support his wife and six children.
>
> Then Garris found an opportunity to take over 141 acres of cropland and farm it on a cash tenant basis. FHA staked him to a farm operating loan of $13,050 to buy necessary machinery and put in crops of peanuts, tobacco, soybeans, and cotton. In his first year of operation as an independent farmer, Garris increased his gross income to $14,000 and his net to $3,500. We think Edward Garris will win his foothold as a successful farmer.

Emergency Loans

During the year FHA made 22,174 emergency loans totaling $94,622,000 to help farmers revive their operations after extensive damage by storms, floods, drought, freezes, and other natural disasters. As of June 30, 1967, more than 24,000 emergency loans totaling $124.3 million were in effect from this and prior years.

Economic Opportunity Loans

These loans have been available only since 1964. Administered by FHA with funds supplied by the Office of Economic Opportunity, they are a direct attack on the poverty problem.

The rural American trapped in poverty ususally must look to some form of self-employment, in farming or a small nonfarm enterprise, to better his lot within his rural home community. But ability and willingness count for nothing unless he can get credit for tools, supplies, and a place to work.

> Mr. Charles Hamlin, in 1964, was a poor Negro farmer in Mississippi. He was trying to feed, clothe, shelter, and educate eight children on a small cotton farm that brought him only $365 a year—a dollar a day. This, plus $500 or $600 he and his family earned doing odd jobs in the community, was the total family income.
>
> Mr. Hamlin needed help. He needed counseling in farm management practices. He needed money to develop his meager farming resources.
>
> He had obtained a small loan from the Department of Agriculture for subsistence and day-to-day operating expenses. But he could not qualify for a larger loan—a loan that would have enabled him substantially to improve his farm and his income.
>
> He needed a different kind of loan. The Economic Opportunity Act of 1964 authorized it.
>
> Charlie Hamlin got his EO loan in May 1965. It enabled him to buy six head of beef cattle—and to clear eight acres of land, put on fertilizer, seed for permanent pasture, and build fences to control grazing.
>
> This was precisely what he required to get a toehold on the economic ladder. That toehold has since made it possible for Farmers Home Administration to give him a regular farm operating loan to buy more cattle.
>
> Mr. Hamlin now has 16 head of livestock and 18 acres of good quality pasture. The total family income, including earnings from off-farm work, has risen to $3,000—not very much, it's true, but *triple* what it used to be. In less than three years Charlie Hamlin's net worth has doubled. He is slowly making progress.

Economic Opportunity loans, totaling $62.3 million from January 1965 through June 1967, helped more than 35,000 low-income rural families. Some were farmers unable to qualify even for regular FHA loan programs. Others launched into nonagricultural production of goods and services for which there was a market in their home localities.

Occupations taken up by EO borrowers have ranged through more than 350 different kinds of small enterprises. These include mechanical and electrical repair, sewing, carpentry, plumbing, woodworking, tree cutting, lawn mowing, painting, shellfishing, cleaning and pressing, recreation services, bus lines for industrial workers, handicrafts and native arts, barbering and beauty services, show repair, food specialties, and small general stores in remote rural communities.

A total of 16,453 individual EO loans amounting to $28,159,747 were made during fiscal 1967.

Helping Farmers Work Together

The spirit of cooperation, long an outstanding characteristic of American agriculture, is still active. Through various programs, we help farmers combine their resources to boost their earnings and standards of living.

For example, EO loans to individuals cannot exceed $3,500. Where larger sums are needed, such as for the purchase of expensive machinery, groups of low-income rural people form cooperatives to buy

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and share machinery or other goods and facilities the members can use to earn better family incomes. In fiscal 1967 we advanced $4,086,383 in such loans to 382 cooperatives. The total since January 1965 is $7,350,000 in EO loans to 722 cooperatives.

Another form of FHA-financed cooperative that renews opportunity for the family farmer and rancher is the grazing range shared by cooperative members. Insured loans totaling $19 million were made to 75 such associations in fiscal 1967, opening the way for 965 family-sized farms and ranches to gain the use of much-needed grazing land. Since the program was begun in 1962, 171 associations have received loans to improve and operate nearly 2.4 million acres of land for the benefit of 2,500 small farmers and ranchers.

We have urged the nation's co-op leaders to expand and develop cooperatives, to locate new plants in the countryside whenever they possibly can, and to search diligently for new ways to bring the benefits of cooperation to more rural Americans.

To facilitate these efforts, we reorganized Farmer Cooperative Service, giving special impetus to developing of new rural services for low-income groups.

FCS conducts market surveys, analyzes supply sources, and evaluates transportation and other factors to determine the feasibility of co-op plant expansion.

In the second quarter of 1967, farmer co-ops invested $130 million in new plants, with three-fourths going into nonmetropolitan areas. FCS helped many of these co-ops plan their new investments and decide on their locations.

Such enterprises foster rural-urban balance by bringing more jobs, new housing, additional community facilities, and new supporting businesses and services to rural communities.

FCS continued to help existing co-ops improve their operations and surmount difficulties. It provides technical assistance for rural cooperatives serving a cross-section of U.S. farmers. A co-op at Selma, Ala., owned by 1,200 low-income farmers in 10 counties, for example, ran into marketing problems this year. Working with Federal, State, and other organizations, FCS helped the co-op find markets for more than 1,000 acres of unsold cucumbers and build toward a sounder merchandising system for the future.

The "New Crop"—Recreation

A decade ago who would have thought that recreation could be a crop more valuable to many a landowner than corn or cottonseed? Today thousands of farmers know that recreation can be "harvested" as an additional source of income.

Each year the number of Americans vacationing in the great outdoors increases sharply. Public recreation areas are overtaxed at the popular sites, and there are increasing opportunities for farms and rural communities to provide commercial recreational facilities.

Several USDA agencies have programs of assistance for farmers interested in developing recreation facilities. The Soil Conservation Service offers technical aid, the Farmers Home Administration provides credit, the Agricultural Stabilization and Conservation Service makes aid available on a share-the-cost basis, and the Extension Service offers educational help.

A farm golf course

Riding is part of the day on a vacation farm.

During 1967, more than 3,800 landowners and operators established their first commercial recreation enterprise, and 946 expanded previously established enterprises. About 300 landowners changed to recreation enterprises as a primary source of income. More than 34,000 private individuals and groups established or expanded recreational developments primarily for non-commercial use.

Morris E. LaFrance of Randolph Center, Vt., reduced his dairy herd and converted 29 acres of land in feed crops to a successful day-use beach, picnic area, and camping and trailer site. Near a lake on his property he built a picnic pavilion which will accommodate nearly 300 persons. He is now grossing more than $5,000 from his recreation enterprise.

Farmer interest in the commercial production of trout, catfish, and minnows has increased markedly during recent years. Recreational fish-out ponds, stocked with catchable-sized fish, have become extremely popular. They now account for the bulk of the production of both catfish and trout and contribute importantly to the economy and recreational resource of many areas.

W. P. Dempsey of Floyd County, Ga., offers fishing, saddle trails, picnicking, and camping on part of his farm. With cost-share help, he has established a 2½-acre fishing lake surrounded by 18 acres of new grassland, and he has also built 4,000 feet of saddle trails.

Our Cropland Adjustment Program is proving to be a considerable boon to recreation. In return for taking unneeded cropland out of production farmers receive payments in relation to the value of the crops normally grown on these acres. An additional payment is made to those who open these lands to the public for recreation without charge. In 1967, more than 6,500 farmers opened 500,000 acres to the public for hunting, fishing, trapping, and hiking.

Our efforts to develop facilities for outdoor recreation include assistance to communities. The Extension Service, for example, uses workshops, short courses, and seminars on the development and management of recreational facilities and enterprises. It also assists in forming associations to develop and carry out recreational projects. Nineteen State Extension Services now have full-time recreation specialists. In all of the other States there are specialists who give part of their efforts to leadership in recreation program responsibilities.

The Wisconsin Cooperative Extension Service helped a local group promoting tourism chart canoe trails on three rivers in four counties. They developed a 30-page booklet for distribution at sports shows. They also constructed a tourist information center, operated by senior citizens who also merchandise craft items produced by retired workers. Three campsites with 65 units have been developed. Extension arranged and sponsored training programs to provide a competent work force to serve tourists.

The Soil Conservation Service helped communities and individuals convert over 400,000 acres to wildlife and recreation during fiscal 1967, an increase of 40 percent over the preceding year.

SCS helped local governments establish or expand 1,350 public recreation developments.

The Farmers Home Administration lent $28 million to rural organizations sponsoring 382 recreation projects. These loans will be repaid from visitor and membership fees collected by recreation centers.

Recreation research is receiving increasing emphasis. Appraisals of local potential for outdoor recreation were completed or were underway in more than 1,200 counties at the end of fiscal year 1967. These

Fun at campsite.

Beside a park lake.

appraisals are conducted under SCS leadership in cooperation with local Soil and Water Conservation Districts and Technical Action Panels.

It is important to know the economic impact of recreation on local economies. An Economic Research Service study of a northern Wisconsin resort area revealed that incomes of retired people living in the area are a stabilizing influence on the local economy. The area is recreation-oriented with considerable part-time and highly seasonal employment.

Our research indicates that areas depending on a recreation industry could profitably give increased attention to the possibilities of stabilizing their economies through well organized programs to attract retirees.

Wyoming experiment station economists studied the effect on the local economy of the new Flaming Gorge Reservoir in the Lucerne Valley. They found that 59,000 tourists made a direct contribution of $529,700 to the economy. Over $565,000 additional in purchases was generated by the visitors direct spending. Nearly all visitors came to fish and camped near the lake shore. They also enjoyed sightseeing, boating, water skiing, and swimming. They spent an average of $10.68 per party on each visit: $5.26 for gas and oil, $2.68 for food and beverages, and $2.74 for other retail goods.

"OUTREACH" INTO RURAL AMERICA

We have a substantial array of Federal programs to help rural America. But better coordination is needed among Federal, State, and local agencies. Many services available from Federal agencies are not utilized by rural people because of a lack of knowledge and communication.

Within the USDA, our Rural Community Development Service maintains a close working relationship with FHA, SCS, Extension, Forest Service, ASCS, and other USDA agencies to develop policies and procedures that will enable rural people to participate effectively in USDA programs.

RCDS also maintains a working liaison with non-USDA agencies, such as the Appalachian Regional Commission and other economic development Regional Commissions, to determine what programs and services would be useful to rural people.

During the year RCDS identified approximately 200 Federal programs administered by agencies outside of USDA that would help rural people. Information was provided on these non-USDA programs for the use of Technical Action Panels. These panels made up of USDA field personnel and other Federal, State, and local government leaders engage in health, welfare, education, and housing activities, and serve all 3,000 rural counties.

The Technical Action Panels not only tie all of our field offices together for maximum effectiveness, they make it possible for any rural village, or individual, to get help in locating the government agency that can best assist them.

The Department was involved in rural community planning and economic and social betterment in fiscal 1967 to an extent unmatched in previous years.

Thus, SCS intensified staff assistance to field offices in providing help to low-income rural families. Discussions of "techniques of working with low-income rural families" were held with more than 20 State Technical Action Panels. Meetings were held with numerous community action agencies to tell them how soil conservation districts locate and assist low-income rural families.

The Free Hills locality of Clay County, Tenn., is a predominantly Negro community of 35 to 40 families who have farmed on the narrow ridges and in the valleys since Civil War days. SCS personnel and the local Technical Action Panel cooperated to work out a community plan involving woodland improvement, home and road improvement, a community water system, a sanitary land fill, recreation facilities, beautification projects, etc. Several of these projects have already been started. The Extension Division of Tennessee Agricultural and Industrial State University assisted with a community survey and is helping to plan and carry out the project measures.

One of our important goals has been to increase and improve community leadership. Here the Extension Service has a prominent role. Leadership programs are geared to the special interests of local government officials, development and civic groups, and other local leaders.

Extension sponsored over 4,300 meetings, in-depth schools, seminars, workshops, and conferences, for more than 83,975 participants in the last half of 1967. Extension workers also assisted more than 16,000 nongovernmental groups to plan and organize training meetings for their leaders in the same period, and served as resource people in many of them. More than 262,000 people participated in such training endeavors.

Hundreds of area development organizations have resulted from this work in leadership development.

An editorial in the Hartford Times (Connecticut) stated:

"It's been a long time coming, but the goal is in sight. We are referring to the possibility of creating a Northeastern Connecticut Regional Planning Agency." Much of the credit for this push, the editorial continued, was due to the Windham County Agricultural Agent.

The Extension Community Resource Development program aims not only at creating leaders. It follows through by helping people understand the need for quality services and facilities, aiding them to develop community organizational structures, and assisting the leaders to obtain necessary financial and technical assistance.

The county school system in Suwanee County, Fla., had lost its accreditation and the people were genuinely concerned about improving the quality of education for the students.

The Extension Service and the Rural Areas Development Committee helped form a citizens group known as BEST (Better Education, Schools, and Teachers). The group, after careful study, decided a bond issue was needed. Following a campaign supported generally by local government officials, community leaders, and civic groups, the county approved a $1.9 million bond issue to improve educational facilities and programs.

Counties and communities receiving this kind of Extension assistance have completed plans for or have developed 1,622 recreation facilities, 1,488 water and sewage projects, 1,334 school and educational programs, 768 health facilities, and 558 miscellaneous facilities and services from July 1, 1967, to December 31, 1967.

CREATING NEW JOBS

Economic growth created more than 13.5 million jobs in the United States between 1945 and 1960. But, in effect, all the net gain took place in large urban centers. New business and industrial jobs in towns and smaller cities was offset by rural job losses in agriculture, mining, and other resource-based industries.

In recent years, many rural communities have set up development committees to work with prospective industry in finding suitable plant locations, arranging financing, and securing trained and untrained workers.

Fortunately, the rural job situation is improving. Recent investigation indicates that in 1962, 1963, and 1964, when an average of 1.2 million new jobs a year were added to the national economy, one-fourth of these jobs were created in rural counties—counties with no city larger than 10,000 people.

These 200,000 new jobs a year are about half the number needed to stop the flow of people from the countryside to city centers.

Role of USDA Agencies

USDA agencies have contributed substantially to increased rural employment.

Since 1960, more than 3,500 new business enterprises employing nearly 48,000 rural people have been established as a result of conservation work carried out with technical and financial aid from the Soil Conservation Service.

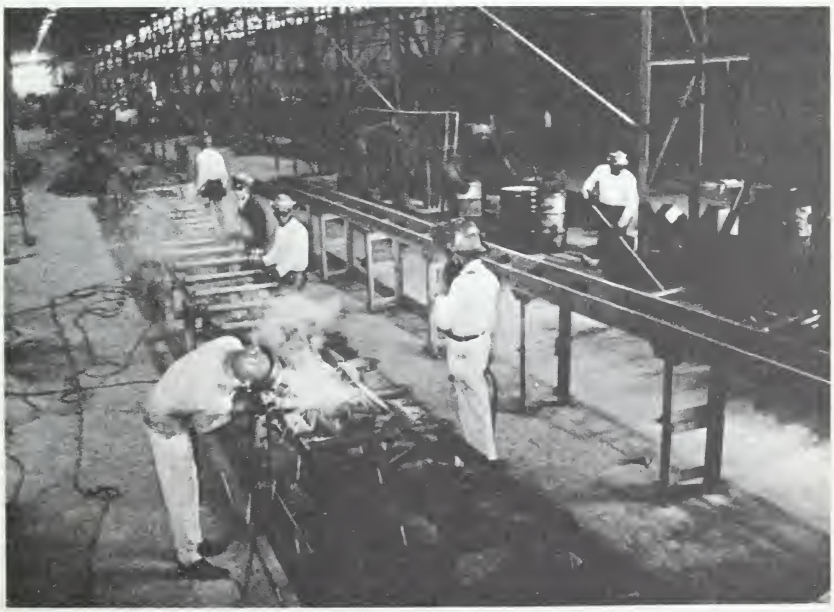
Rural electrification has been the key to recreational and industrial development in many areas. Since mid-1961, over 216,000 jobs for rural people have resulted from 2,700 projects established with the help of REA electric and telephone borrowers.

> Congaree, S.C., is an outstanding example. An REA borrower, the Tri-County Electric Cooperative, helped the Congaree Iron and Steel Company expand its manufacturing plant to meet market demands. Today, 400 local people have full time jobs. The company's $1½ million annual payroll has created new life in the community. Two new schools and 27 classroom additions to existing schools have been built. Head Start Programs, supervised by the Office of Economic Opportunity, are underway. Children who had never seen inside plumbing, or had a physical examination, now have these benefits. More than 75 new homes have been bought or built by the company's employees. Other additions include three new service stations, a bakery, a small shopping center, a new post office, a machine shop, two new laundries, two new churches, a new restaurant, and a fish bait business. Property values have tripled.
>
> And, of great importance, young people who formerly were forced to leave the community—going to the big cities—are now returning home for the opportunities there.

In fiscal 1967 alone, Rural Electrification Administration borrowers helped set up about 616 projects to establish new small industries, new community facilities, and new tourist attractions. These activities created about 34,000 jobs.

Extension workers helped more than 377 counties develop or revise Overall Economic Development Plans, and assisted 118 multicounty groups to develop OEDP's. They also aided in developing or planning 1,870 agricultural marketing and processing facilities; 771 nonagricultural businesses or industries; 1,691 recreational and tourist businesses; and 286 miscellaneous projects. All of this was accomplished in the

The Rural Areas Development Program brought this factory to rural Tennessee.



Some of the hundreds of rural workers at the Congaree plant.

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last 6 months of 1967. It is estimated that economic development projects set up with Extension help provided nearly 52,000 new jobs during 1967.

> Such projects over the past five years have enabled the people of Clair County, Ala., to increase payrolls by $25 million a year, provide 1,750 new jobs, and expand capital investment by $66 million. The expansion includes 15 industrial projects, 13 public utility expansions or improvements, 12 public buildings or improvements, and about 40 recreation and tourist businesses.

Financing Industrial Development

Several States are using a loan guarantee program as an alternative to industrial bonds. As developed in Maine, this plan operates through local nonprofit industrial development corporations financed solely from private sources. The State participates by insuring repayment of up to 90 percent of the loan. Maine, Rhode Island, New Hampshire, Vermont, Connecticut, and Delaware all have this type of program.

The plan overcomes some objections to government financing of industrial development, in that it works primarily through the private sector and the initial outlay of public funds is relatively small. Where the problem is not a lack of private credit, but only an unwillingness to invest in risky ventures, this plan appears to have good possibilities for success. However, it does not meet the problems of areas lacking adequate private credit resources.

Aids to Youth

Many of America's underprivileged youth continue to take advantage of opportunities with the Neighborhood Youth Corps and Job Corps Civilian Conservation Centers located within National Forests. Working with the Forest Service, these young people raise their economic and educational capabilities and at the same time help make much-needed improvements in the Nation's forest resources.

The Forest Service in cooperation with State foresters had about 5,000 participants in Neighborhood Youth Corps projects during fiscal 1967. Jobs varied from the construction of trails in the Inyo National Forest in California to serving as trained engineering aids on highway location crews in the Six Rivers National Forest in the same State.

The Forest Service operated 47 Civilian Conservation Centers with an enrollment of 8,400. Thousands of young men from these Centers have already been placed in jobs, entered the military service, returned to school, or have transferred to Job Corps Urban Centers for specialized vocational training.

The Soil Conservation Service provided employment for some 1,700 youths in fiscal 1967 in special training and economic development programs and in its regular field operations.

Approximately a hundred young people got on-the-job training in field and office work related to soil and water conservation in Neighborhood Youth Corps projects and college work study programs throughout the country. Another 233 youths were given summer jobs with SCS in the Youth Opportunity Campaign in 1967.

The Soil Conservation Service directly employed 654 student trainees, most of whom went back to college with the prospect of per-

manent employment with SCS after graduation. In addition, SCS had approximately 750 temporary employees between the ages of 16 and 21, mainly working as conservation or engineering aids in the field.

During the year Farmer Cooperative Service co-sponsored four regional member relations conferences emphasizing youth and young farmer involvement.

Through these and other co-op programs, young Americans are learning that farmer co-ops offer a full range of farm and business career opportunities. They are discovering new and exciting reasons for living in rural America.

4–H Reaches Out to Low-Income Youth

Nearly 35 percent of all 4–H members in 1967 came from families with incomes below $3,000 a year.

About 85,000 4–H members between the ages of 14 and 19 participated in formal career exploration programs. Extension helped acquaint youth and their parents with opportunities in the Job Corps, Neighborhood Youth Corps, Manpower Development Training Act, College Work-Study, and with sources of loans and assistance for further education.

In addition, Extension provided work situations and supervision for 1,219 Neighborhood Youth Corps youth and 1,083 College Work-Study youth during the summer of 1967.

Nearly 250 counties throughout the country are now conducting special demonstration programs for low-income youth. Special camping programs have been conducted in many States for the economically deprived. New York State is funding three such projects through the Governor's Committee on Children and Youth.

A 4–H Operation Expansion pilot project was conducted in 21 counties of several States by the Federal Extension Service and the respective State Cooperative Extension Services. Preliminary reports indicate increases of about 30 percent in the number of members enrolled and volunteer leaders involved.

A Kentucky program to raise the aspirations of low-income 4th graders in 15 eastern Kentucky counties involved more than 5,500 boys and girls. In North Carolina an additional 10,000 boys and girls were enrolled in 4–H and 636 new adult leaders were added. Arkansas reached an additional 12,000 youth. Louisiana concentrated on enrolling boys and girls from extremely deprived families. Of 497 enrolled, 377 completed the full series of meetings and received recognition for their accomplishment.

EXTENDING RURAL HORIZONS

Next to the lack of good job opportunities, rural America's greatest handicap is its obvious disadvantage in housing and water facilities.

Rural Housing

More than any other element on the rural scene, improved housing reflects the slowly rising quality of living in rural America.

Rural housing credit through the Farmers Home Administration, augmenting credit available from conventional lenders and other agencies, has bounded from a total of $60 million in fiscal 1961 to $442 million in fiscal 1967.

Extension helps Arkansas children work on crafts.

This bus is a youth training center. It contains a gas range, sewing machine, power tools, and power and water supply.

In the absence of other credit, the program is now available to any farm or rural resident in towns of up to 5,500 population. We emphasize serving the needs of low and moderate income families, senior citizens, and farm laborers for family-owned homes or low-cost rental housing. These are the people who have suffered the most from bad housing in rural America.

FHA credit is enabling thousands of low-income families to move into modest, modern homes built for substantially less than $10,000 that compare well with urban-area dwellings costing twice as much. "Self-help" loans enable poverty-level borrowers to get materials and build decent homes far below ordinary cost by doing most of the construction work themselves.

The variety of homes among the 48,573 dwellings built or improved through the rural housing program in fiscal 1967 demonstrates that town and country living, besides its many environmental advantages can be fully comparable with city and suburban living in modern home conveniences. Attractive houses and apartments with up-to-date equipment and utility services are replacing the faded farmhouse and cottage with their traditional outside plumbing.

Of the $442.1 million advanced through the rural housing loan program in fiscal 1967, 96 percent was supplied by private lenders in loans insured by FHA. FHA grants totaling $2,678,440 were combined with insured loans of $3,818,360 to finance 26 low-rent housing centers for domestic farm laborers. Non-profit associations and private commercial builders also used FHA credit to develop 110 rental housing projects for the elderly and for younger families of low and moderate income.

Water and Sewer Systems

We have made a good start toward providing badly needed water and sewer systems in rural America. Some 35,000 American small towns and settled rural areas entered the 1960's without moderate water systems. But now countywide rural water systems are beginning to parallel the rural electric systems that blanket the countryside.

Since the inception of the rural water facilities program in 1961, about 2,500 projects have been created.

More than 1.2 million people, living in 240,000 rural households, will be served by 1,112 new systems financed by FHA during fiscal 1967 alone. Loans and grants for water and sewer systems totaled $197.7 million in fiscal 1967—compared with less than $2 million in fiscal 1961.

East-central Spencer County in southern Indiana was one of more than 1,000 localities in the rural United States that turned on new central water and sewer systems during fiscal 1967.

The area, known as Finch-Newton, had been presented with an opportunity to win a new industry (a plant manufacturing pressed-wood paneling) that would insure the region's economic future. Everything depended on whether the community could supply the plant's requirements for water.

The challenge was met. A community non-profit corporation was formed. It obtained organizational assistance and a $312,000 insured loan for a water system through Farmers Home Administration.

Water now flows through a new system to the new plant, as well as to 160 rural Indiana homes. Safe and sufficient water is now available at the turn of a tap.

Though we have merely scratched the surface, FHA carried a back-

log of more than 4,000 water and sewer applications into fiscal year 1968.

Electricity

Among the most potent forces to upgrade rural living in terms of convenience, communication, and commerce are electric power and adequate telephone service.

Altogether, more than 25 million rural people—over two-fifths of our rural population and about one-eighth of our national population—are now served through the facilities of REA electric and telephone borrowers.

REA's 993 electric borrowers provide power to about 5.8 million rural units. These consumers used an average of 545 kilowatt-hours of electricity a month in 1967, nearly double the average consumption 10 years ago.

REA loans are sound investments in the future of America. Of the $5.5 billion advanced to REA electric borrowers through January 1, 1968, almost 2.8 billion in interest and principal has been paid back. About $314 million of principal was paid ahead of schedule.

During 1967, REA loanded $258.0 million for construction of distribution lines that will serve 155,000 new rural consumers and provide expanded facilities to meet the growing power requirements of existing consumers.

Despite notable progress, however, rural people still pay more for their power than urban dwellers.

REA borrowers, of course, are continuing their efforts to provide rural electric service comparable in quality and cost to urban service. During 1967, 76 electric systems reduced rates, producing annual savings of nearly $1.5 million annually. Added to other rate reductions during the past 5 years, this latest reduction cuts consumers' power bills by almost $20 million annually.

Telephones

With the accelerated drive for recreational, commercial, and industrial development in rural areas, improved telephone service has assumed new importance. The eight-party service of years ago no longer satisfies subscriber demands. About one-fourth of the subscribers on REA-financed systems now have one-party service and the goal is to double this by 1975.

Since the telephone program began in 1949, REA has financed 871 telephone systems—640 of them commercial companies and 231 cooperatives—with loans totaling almost $1.4 billion. These systems are bringing new or improved all-dial telephone service to 2.2 million farm and other rural subscribers. Four out of five farms now have telephones—compared with one in three in 1949—and 95 percent of the service is "dial."

During 1967, REA made 192 telephone loans totaling $144.8 million. These loans—including 23 to new borrowers, two of them cooperatives—will provide new or improved service for 115,000 subscribers. Forty-five rural telephone exchanges went "dial" during the year.

This also is a good investment. Telephone borrowers, by January 1, 1968, had paid $299.7 million on the principal and interest of their

REA loans, including $14.6 million of principal paid ahead of schedule.

Over half of the REA borrowers in 46 States serve fewer than 1,300 susbcribers each. But all of them render modern dial service, and are continually upgrading services.

One of every three telephone loans in 1967 provided for single-party service within a system. The first REA-financed single-party, underground telephone exchange in the southeastern United States was placed in operation by the Peoples Telephone Company, Leesburg, Alabama.

An REA borrower in Arkansas, the Allied Telephone Company, converted the last magneto telephone exchange in that State to all-dial operation. The borrower also replaced outmoded hand-strung wire with 40 miles of underground line.

An REA-financed telephone cooperative in North Dakota installed underground, stormproof lines to serve six Minuteman missile sites.

Ahead of us lies the tough job of reaching sparsely populated areas where nearly half the farms still lack telephones. Rugged terrain is one of the difficulties in reaching these people. REA borrowers, however, are facing up to this challenge as they continue to seek the goal of equal service for rural people.

We are continually gaining deeper insights into the problems of rural America. During the year our Economic Research Service prepared "Farm Labor in a Changing Agriculture," a comprehensive report on the current labor problems and situation of American agriculture.

The relationships between farm operators and farm workers are changing as a result of broad economic forces. Mechanization is continually reducing the need for workers but increasing the skills required of the employee. Keener competition for workers from nonfarm employers is also creating problems for farmers, especially in view of the large imbalance between the earnings of farm and nonfarm workers.

In 1965 for example, farm workers averaged only $1.14 an hour compared with $2.61 for workers in manufacturing industries.

ERS also helped plan, prepare, and fund a "milestone" report, published by the Bureau of the Census, dealing with the streams of U.S. migration between 1955 and 1960. This is a great advance in the development of data on U.S. population mobility. It shows the number of persons moving to the 509 State economic areas of the country from each other area.

A report on farm operator levels of living using data from the 1964 Census of Agriculture indicates that most of the lowest ranking counties in the United States were concentrated in south Appalachia and the South, with the highest ranking counties in the Northeast and the West. It shows, however, that the South has made the most outstanding percentage gain in level of living since 1959.

It is generally agreed that more precise information is needed on comparative education in rural America. Preliminary studies indicate, as expected, that the quality of public elementary and secondary education available to rural children in poor counties is far inferior to that in the wealthiest counties. Moreover, the formulas for fund distribution under the State equalization programs and the Federal Ele-

mentary and Secondary Education Act of 1965 apparently result in counties in the wealthiest States getting the largest amount of aid per child. In a sample studied by ERS, the per-child *allowance* under Title I of the Elementary and Secondary Education Act of 1965 in the most affluent counties was greater than the *total expenditure* per child from all revenue sources for education in the poorest 1 percent of the counties.

With the guidance provided by these and other studies now in progress, we should be able to make faster progress toward the desperately needed revitalization of rural America.

The great goal is to restore rural-urban balance—to recognize that space-starved cities and job-starved rural areas are not two isolated, but two interrelated, phenomena—to understand that the rural poor of yesterday have become many of the city's poor today, and that if we do not succeed in revitalizing rural America, the rural poor of today will become many of the urban poor of tomorrow.

It is time that the Nation faced up to these facts—and acted on them.

The need for a national plan is obvious. Action on a truly national scale is imperative.

We can build a new kind of Town and Country Community in rural America.

We can look forward to a time when the American landscape will be dotted with communities that include a blend of renewed small cities, new towns, and growing rural villages—each cluster with its own jobs and industries, each with its own college or university, each with its own medical center, each with its own cultural, entertainment, and recreational centers, and with an agriculture fully sharing in the national prosperity.

A dream world? No! It is a world we can build, if we are willing to work for it.

These ideal communities can in fact be the Communities of Tomorrow.

THE FOURTH GOAL: RESOURCES IN ACTION

With the pace of change constantly accelerating, here are some of the developments projected for the year 2000:

- U.S. population up 130 million.
- Food needs more than doubled.
- Demand for wood products about doubled.
- Water needs for municipal use doubled—for manufacturing use quadrupled.
- Outdoor recreation demand up 300 percent.
- Irrigation withdrawals of water up 50 percent.
- Land used for homes, schools, and factories up 200 percent.
- Land used for reservoirs up 180 percent.
- Land used for wildlife refuges up 133 percent.
- Land used for transportation up 125 percent.

To meet these needs, the quality of America's total environment must be vastly improved. An expanding national economy requires an expanding resource base. We must harness technology to increase and improve resource productivity and beauty without polluting our air, water, and soil.

People on farms and ranches and in rural communities must be given encouragement, incentive, and help on the parts of the job they cannot do by themselves.

Conservation today encompasses the full sweep of interrelated natural resources and their management and use. The use, restoration, and preservation of resources must be made compatible. Man now has a special challenge to fit his activities and needs harmoniously into the total environment.

It is no secret that we are facing an environmental crisis. It affects every one of the basic elements of the biosphere—air, earth, and water.

A narrow piecemeal approach in which we deal with one resource, or one use, or one purpose at a time can never resolve this crisis. Only through the most skillful coordination of uses and planned management of resources will we be able to reverse the growing impoverishment of the natural environment in which we live.

A prerequisite to an effective coordinated approach to the resources problem is wide public understanding. During 1967 we published "Resources in Action—Agriculture/2000," a document which redefined and set down new conservation policies from the overview of our total environment. We distributed it widely to people who influence the use of natural resources.

A workshop on "Soil, Water and Suburbia," sponsored jointly by USDA and the Department of Housing and Urban Affairs, called attention to the many nonfarm uses of published soil surveys. It generated many information requests from persons engaged in zoning, planning, and building. "Know the Soil You Build On," a new SCS publication, had its initial release at this conference.

Soil Conservation Districts

The "total" approach was continued in our work with the soil conservation districts. While continuing their use of SCS technical aid for individual cooperators, the districts responded to the changing character of land use and conservation problems by giving increased attention to natural resource planning and development. About 83 percent of the 3,010 conservation districts in the Nation have now entered into new working agreements with the Department to provide for broadened, long-range programs.

More than 95 percent of the Nation's land in farms falls within these local, self-governed conservation districts. At the close of fiscal year 1967, 2,121,248 individuals who owned or operated 708 million acres were cooperating with the districts and applying or planning soil and water conservation measures with SCS aid. Nearly 46 percent of the operating farm units and more than 50 percent of the acreage included in the districts are now in scientifically planned conservation programs.

During the year, SCS helped 1,169,317 land owners and operators plan and apply conservation work. The total land considered to have adequate conservation treatment increased by more than 47 million acres in 1967.

Conservation Needs Inventory

We are updating the National Inventory of Soil and Water Conservation Needs to reflect current conditions on rural non-Federal land.

During 1967 we completed field work to obtain data on land use and treatment needs from 130,000 sample areas in all 50 States. The data are being placed on cards and tapes at two statistical laboratories. They include information on soil, slope, erosion, land capability units, land uses, and needed treatments summarized by land resource areas, land resource regions, agricultural subregions, and watershed subbasins.

County tables are being prepared for the conservation needs inventory, showing land uses, land capability subclasses, and conservation treatment needs.

Nineteen States completed field work on the inventory of small watershed project needs.

Resource Conservation and Development Projects

We are coordinating conservation with economic development through multicounty Resource Conservation and Development projects. Each of these projects is "multipurpose" in the broadest sense of the word; each conserves natural resources in an integrated, well-planned manner; each brings jobs to local communities, conserving the human and economic base of rural America.

At the end of 1967, 28 RC&D projects were in operation with 13 others moving rapidly toward that stage. About 1,900 project measures were going forward in operating project areas.

Measures completed in the first 20 operational projects provided over 11,000 man-years of employment during the period of construction and are expected to provide continued future employment of

Conservation at its best.

Conservationists at work.

nearly 12,000 man-years annually. They are increasing output of goods and services by an estimated $65 million annually. Capital investments in these project measures is estimated at about $22 million, most of it from non-Federal funds.

The resource conservation and development program is a catalyst, stimulating investments in agriculture, new businesses, private and community recreation facilities, improved housing, and other recognized needs.

> A commercial rural recreation-home development in Pennsylvania, for example, increased taxable property in two Mercer County townships 33 percent, from $1.8 million to $2.4 million in 2 years. Local authorities anticipated that an additional $500,000 would be added to the tax rolls in 1967 and a similar amount in 1968. Local expenditures for building supplies, furnishings, services, etc., added another $100,000 to the local economy the first year alone.

Organizations in Resource Conservation and Development project areas obtained nearly $1 million in FHA loans during fiscal 1967 to finance improvements that will bring economic benefits to their communities. Small watershed organizations received 28 loans totaling $5.5 million to finance local costs of conservation, flood control, recreation, and water supply projects.

Great Plains Conservation Program

After 10 years of operation, the Great Plains Conservation Program is producing far-reaching benefits.

In the extremely dry early spring months of 1967, some unprotected areas in the Plains States experienced serious wind erosion. But in those areas where from 25 to 40 percent of the agricultural land was under Great Plains Program contract, duststorms were significantly reduced.

More and more Great Plains cropland not suited to cultivation is being converted to permanent grassland and is now supporting livestock enterprises. Approximately 138,000 acres of cropland were converted in fiscal 1967 alone. Planned conversions now total almost 1.7 million acres, 22 percent of all the cropland covered by Great Plains contracts.

With 10 eligible counties added to the list designated to participate in the program in 1967, the number of authorized counties as of June 30, 1967, reached 412. More than 4,000 new contracts covering 5,795,204 acres were signed. There were 27,872 contractors in the program, operating 51 million acres.

Grazing Land

Significant conservation progress was made on the 650 million acres of privately controlled range and grazing lands.

Range seeding and proper range use increased significantly, while pasture and hayland planting continued at about the same level as in fiscal 1966, slightly above 2 million acres during the year.

SCS and FHA developed joint memorandums of agreement in several States to guide personnel in assisting grazing associations. SCS rangemen have assisted about 150 FHA-financed grazing associations to date. One hundred coordinated plans were developed with the Bureau of Land Management and conservation district cooperators who use intermingled public and private land. SCS and

Forest Service range staffs studied ways to coordinate assistance to conservation district cooperators who use grazing allotments on National Forests.

The value of agency cooperation is well illustrated by the rehabilitation work done on the South Hills Range Burn, Twin Falls Soil and Water Conservation District, Idaho. Here a total of 75,000 acres on 18 ranches—about half private and half Federal land—burned August 17, 1966. More than 1,000 head of livestock perished.

By June 30, 1967, restoration work completed included 28,803 acres of contour ripping, 44,000 acres of range seeding, 91 miles of fences built, 1,060 acres of wildlife plantings, and 10,300 feet of trees in windbreaks. Helped by good spring rains, grasses seeded in the fall of 1966 were from 1 to 3 feet tall and heading out in July 1967. This normally requires at least two full growing seasons. Careful community plannning, sound technical specifications, and complete treatment by the land owners and operators were responsible for the remarkable success of this rehabilitation project.

All over the country conservationists are successfully adapting research information to local conditions and helping farmers to cut production costs while reducing soil and water losses.

The use of such cropland practices as contour farming, conservation cropping systems, crop residue use, and minimum tillage increased on the order of 5 to 10 percent, although stripcropping and terracing declined slightly from the previous year.

A wind erosion equation was developed and put in use as an aid in planning conservation measures in the vegetable-growing areas of the Northeast and Southeast. This is a major step in improving the conservation program in areas where abrasion resulting from soil blowing damages crops.

Soil Surveys

The Soil Conservation Service completed detailed soil mapping on about 48 million acres in fiscal 1967. Approximately 668 million acres, or about 40 percent of the non-Federal rural land of the United States, is now covered by soil surveys.

The growing recognition of the value of soil surveys in planning land use is illustrated by a continuing increase in the non-Federal funds for making the surveys. The 1967 soil survey plan of operations showed an estimated $700,000 in funds, services, and facilities from local groups, and $1,543,000 from State agencies. In addition, $545,000 was available from other Federal agencies.

We find growing interest in small-scale soil maps for resource area planning, river basin studies, and economic development. And we have more requests for guidance and information concerning the use of soil surveys for nonfarm purposes than our Soil Survey Interpretations staff can handle.

An increasing number of suburban planners, builders, and developers look to soil surveys and their interpretation before deciding on development projects.

Local planning groups and State agencies in 27 States made cost-share agreements totaling more than $700,000 to help provide such surveys in 1967. We estimate that 3½ million acres were mapped in areas that include rapid industrial and housing development.

SCS provided more than 120,000 separate consultative services to local officials planning units and suburban landowners, 12 percent more than in the previous year.

With assistance from SCS engineers, a "Guide for Interpreting Engineering Uses of Soils" was completed and given limited field distribution. This handbook contains up-to-date guidance for making many soil engineering interpretations used by SCS and its cooperators.

Agricultural Conservation Programs

Through the 1967 Agriculture Conservation Program (ACP)—in which the government shares the actual expenses of applying soil, water, woodland, and wildlife conserving measures—we continued to stress treatment of conservation problems on low-income family type farms. We also emphasized getting a conservation program started on farms where none had been undertaken.

More than a million farmers and ranchers took part in the ACP during the year.

While ACP cost-sharing usually covered 50 percent of the cost of the practice, it ranged from substantially less for some practices up to 80 percent for others. Low-income farmers could also get cost-sharing up to 80 percent. Without such aid, most of these farmers could not undertake needed conservation measures.

We stressed the positive approach—the need to develop and use our agricultural resources to meet the requirements of our growing population for living space, recreation, landscape beauty, and clean and abundant water.

The most widespread ACP practice is establishing and improving vegetative cover on land. Among some 50 other conservation practices are: Planting and improving stands of trees, establishing sod waterways, reorganizing irrigation systems, constructing ponds, and building terraces.

ACP Special Projects

Special ACP projects for limited income farmers were undertaken in about 400 counties throughout the country in fiscal 1967.

A demonstration project was approved for a truck farmer in Montcalm County, Mich., to encourage 600 other growers in the county to build needed terraces and establish sod waterways on 30,000 acres of farmland. The project will show how such practices will permit safe cropping of potatoes, dry beans, and other vegetables normally grown on hilly farms in the county.

The cost of this project is estimated at $7,200. ACP will provide $2,500, the farmer $1,000, and Michigan State University will cover the balance.

Another approved project involves the reorganization of an irrigation system serving 37 farmers in Payette County, Idaho. A diversion dam will be built in the Payette River with an adjoining diversion dike to direct the irrigation water to a headgate.

ACP cost-shares will cover about half the total cost of $43,281. The project will provide the 37 farmers with adequate irrigation water while at the same time saving water and preventing erosion.

In the 12-State Appalachia region we helped 2,668 farm families install needed practices on about 64,000 acres during fiscal 1967. Since the Appalachia program began in 1965 through fiscal 1967, nearly 9,200 families were helped to apply conservation treatment on 221,000 acres of farmland.

Practices for which we paid up to 80 percent of the cost include: Seeding grasses or legumes as cover, building terraces and ponds, planting trees or shrubs, and establishing field and contour stripcropping.

While the main purpose is to control erosion, the improved grassland also provides better grazing and forage for livestock, enabling low-income farmers to improve their living by producing more milk and meat for the market and home use. Some farmers also added to their earnings by establishing small recreational enterprises.

Land Diversion Program

To encourage the diversion of land out of plentiful supply crops and into other public benefit uses, we have several programs.

Nearly 75,000 farmers offered about 6 million acres for placement in the 1967 Cropland Adjustment Program. Available funds permitted us to accept only 2 million acres from 31,000 farmers.

Preference was given to farmers who, because of age, disability, other part-time or full-time employment, or other interests, wanted to reduce their farming operations or shift from growing crops to other endeavors.

> Typical of many participants are Mr. and Mrs. Hoyt Sheffield of Blakely, Ga. They placed their 235-acre farm, containing 26.8 acres of allotment crops (cotton and peanuts) and 49 acres of feed grain base, in the Cropland Adjustment Program in 1967 for a 5-year period. They receive an annual payment of $2,936 plus cost-share funds to help establish needed conservation practices on the diverted acres.
>
> The annual payment plus Mr. Sheffield's wages from his nonfarm job provide a good living for the Sheffields and their two children.

Another farmer, 72-year-old J. A. Deas, Sr., of Gainesville, Fla., placed his 250-acre farm in the CAP, established the necessary conservation uses, and retired. His farm contains 152 acres of allotment and nonallotment crops and feed grain base. He receives an annual payment of $3,578 and conservation practice cost-shares.

The Cropland Conservation Program was begun in 1963 as a pilot-level test program in a selected number of States and counties to explore new ways of improving family farm income by converting land regularly in crop production to other income-producing uses. Nearly 600,000 acres have been converted from corn, grain sorghum, cotton, tame hay, peanuts, and other row crops and small grain to pastures, woodland, recreation, and other uses.

In 1967, more than 1,600 farmers in 28 States converted 135,000 acres of land from crops in ample supply to other income-producing uses. This was three times as many farmers and nearly seven times as much acreage as was signed up in 1966. We stretched CCP funds by limiting the agreement period to 3 years, instead of the 10-year maximum permitted by law.

Like the CAP, the CCP provides alternative choices for elderly, disabled, or new-opportunity-seeking farmers. Some participating farmers retired, some shifted to full-time nonfarm employment, and still others took part-time off-farm jobs and reduced their farming operations. They turned to pastures and livestock grazing, or put their land in trees, grass, water storage, wildlife habitat, or recreation enterprises.

The Greenspan Program, authorized under a provision in the Cropland Adjustment Program section of the Food and Agriculture Act

of 1965, is designed to give Federal assistance to other local governmental bodies to help them acquire cropland for conversion to public uses.

During the 2 years that Greenspan has been in operation, 139 grants in 27 States were awarded to local and State government entities. These grants, totaling $1,162,619, helped communities purchase nearly 8,000 acres of farmland for diversion from crops in plentiful supply to needed public recreation, open space, wildlife habitat, natural beauty, and water pollution abatement.

In addition, the program provided $414,249 in cost-share assistance toward installation of conservation practices on land formerly devoted to crops.

Greenspan grants toward cropland acquisition for conversion to public needs are comparable to what a farmer would receive under the Cropland Adjustment Program over a 10-year period for diverting land out of certain crops and into conserving uses. But in no case can such aid exceed 50 percent of the cost of the cropland. The grant assistance is based on the kind and value of crops that have been grown on the farm and on the productivity of the land.

Representative projects have been: Ponds and lakes for wildlife, fishing, boating, and swimming; areas for nature trails, wilderness parks, camping sites, picnic areas, children's playgrounds, football fields, baseball and softball diamonds, golf courses, tennis, badminton, and basketball courts; and areas for hunting, hiking, and horseback riding.

PROTECTING OUR WATER RESOURCES

A little over 2 decades ago, when the Flood Control Act of 1944 was passed, there was widespread concern that the Mississippi, the Missouri, and other major rivers of the United States were becoming increasingly polluted. There was concern that the Potomac would some day be little more than an open sewer—inhospitable to fish and wildlife and too dangerous for recreation. Today, despite the work that has been done, many of our fears have been realized.

Water has become scarce, a limiting factor in agricultural and industrial development. Water pollution is widespread, an increasing threat to health. We still have time to protect, restore, and develop our water resources—but we do *not* have time to waste.

Water conservation is essential to the economic productivity of any region. On a broad scale, river basin planning—an interdepartmental responsibility—has proved its worth in determining how the rising demands for water can be provided for by developing water and related land resources within a region. Watershed development, management, and protection and river basin planning are a major part of USDA responsibilities in conservation matters.

River Basin Investigations

During fiscal 1967, the Department cooperated in 43 river basin surveys. Eight of these are framework studies to provide broadscale analyses of water and related resource problems and the measures needed for their solution. Fifteen others are more intensive studies of specific projects which should be installed within 10 to 15 years.

Twenty studies, including five new starts, are being made in cooperation with State water resource agencies or other Federal agencies to provide information on the agricultural, rural, and upstream aspects of water and related land resources in river basins.

Watershed Protection and Flood Prevention

Experience has proved that most watershed problems are unique to local communities, and their solution must be achieved by project activities involving private and public investments.

Demand from local organizations for assistance in dealing with water problems and related land resource development grew rapidly during 1967.

Local sponsors have initiated requests on about 30 percent of the 8,300 potential projects which the National Inventory of Soil and Water Conservation Needs indicates are needed. The addition of 151 new applications in fiscal 1967 brought the total requests to 2,653.

Authorizations for planning assistance were limited by Executive Order to 100 in 1967, as in the preceding year. Although 1,311 watersheds had been authorized for planning at the end of the 1967 fiscal year, the backlog of unserviced applications continues to mount and is now slightly more than 50 percent of the total number of applications received.

During the year, 88 watershed projects were approved for operations. This brought the total to 817 projects, or about 10 percent of the potential shown in the Conservation Needs Inventory. Another 53 watershed work plans were completed and awaiting approval at the close of the fiscal year.

Forty-five projects were completed, the most in any year since the program began. One hundred and fifty-nine projects in 43 States now have all land treatment and structural measures completed.

Most of these are multiple-purpose projects. In addition to their watershed protection and flood prevention functions, many projects will also provide drainage, irrigation, recreation, fish and wildlife resources, or municipal and industrial water supply.

A total of 136 public recreation developments have been planned in projects approved for operations in 33 States. They will provide basic facilities for an estimated 7 million user-days of recreation annually by the general public.

That many man-made flood control reservoirs, constructed primarily to prevent flood damage and to produce electric power, can also serve as focal points for water-based recreation, is well illustrated by the Allegheny Reservoir in Pennsylvania.

> The Forest Service and the Corps of Engineers are developing this 12,000 acre reservoir for both economic use and public enjoyment. Located mainly in the Allegheny National Forest, it offers an important recreation opportunity for 11 million people who live within a radius of 125 miles.
>
> The Forest Service manages the recreation facilities around the reservoir, which will eventually cover 21,000 acres and extend into New York State. Visits by 1970 are estimated at 3 million annually, or double the actual visits counted in 1967.

Similar developments are underway at Dillon Reservoir in Colorado and Sam Rayburn Reservoir in Texas.

Water Conservation and Management Practices

Much of the effectiveness of watershed conservation depends on what is done on thousands of farms within the watershed. Control of water on the farms is no less vital than controls in the rivers and streams.

The practices of land smoothing, land grading, and land leveling for improved water management are increasingly needed. They permit more effective use of rainfall and irrigation water, provide better drainage, and as a bonus make for more efficient use of modern farm equipment.

Cooperators with conservation districts completed 322,000 acres of land smoothing, 38,000 acres of land grading, and 457,000 acres of land leveling in fiscal 1967. They also put improved irrigation water management into effect on about 3⅓ million acres, 18 percent more than in the previous year.

Snow Surveys and Water Supply Forecasting

Further advances in the technology of snow surveys and water supply forecasting enable us to improve the quality of data provided to water users. The continuing shift from manual procedures to automatic telemetry makes it possible to obtain current data from remote points instantaneously. This improves the quality of the data. It also eliminates the need for personal on-site snow measurements.

We are helping the States gradually upgrade data collection and computer analysis of past records to improve forecast formulas and accuracy. And we cooperate with the Weather Bureau in developing plans for exchange of data, maps seting forth the details of data collection networks, and proposed telemetry stations.

Water and the Forests

Our National Forests, of course, are vitally important water-producing areas. The Forest Service is now measuring surface water yields at 96 watersheds, seeking to gauge the effects of forest land uses on the environment. We must know more about what protective measures are needed. We must determine the capability of these watersheds to meet long-range water needs.

Twenty-one barometer watersheds have been established to date. These are monitored areas equipped with scientific instruments that measure the quantity and quality of ground water, and the climatic factors which influence the accumulation of water. On 10 of these watersheds we have made detailed hydrologic surveys and analyses and have installed the essential instruments.

During 1967 several new computer programs were developed to handle the mass of data collected on barometer watersheds and on hydrologic surveys. We are testing additional programs to permit storage and retrieval of soil and water use data and we expect these to be in operation by the end of 1968.

PROTECTING THE NATION'S TIMBERLAND

There are 187 million acres in our 154 National Forests. These immensely valuable national resources figure prominently in our Resources in Action planning.

The value of our National Forests and the scope of the Department's activities in managing and improving them can only be broadly sketched in this report.

Timber

A total of 10.8 billion board feet of timber was harvested from the National Forests in fiscal 1967. On the stump, this timber was valued at $188,710,969. By the time it is processed and reaches consumers in many different forms, it will have generated about $5 billion of income in the national economy. We estimate that the National Forests supply almost one-fourth of all the wood used by American industry for homes, paper, and other wood products.

Cash Receipts

One-fourth of the net total money received by the Forest Service from timber harvests, grazing fees, recreation, and other land-use fees on the National Forests is paid out to the States.

Total cash receipts for the use of National Forest resources amounted to $182.7 million in fiscal year 1967, an increase of about $8.8 million over the previous year. Of this total, $172.8 million came from timber sales, $7.9 million more than in 1966. Receipts, other than 25 percent of the total set aside for the States, are turned over to the U.S. Treasury.

The States' share, an alltime high of $41.9 million, is apportioned according to National Forest acreage in each State, with the money earmarked for public roads and schools.

Tree Planting

To replace timber harvested, over 1 billion small trees were planted on more than 1.4 million acres of public and privately owned lands in fiscal 1967. Forest Service cooperative programs accounted for 70 percent of the total. Forty-eight State forestry agencies cooperated with the Federal Government in producing and distributing 572 million tree seedlings for planting on State and privately owned lands.

Soil and water conservation district cooperators improved private woodlands. They planted trees on 295,000 acres, 26 percent more than the year before.

Cooperating with State and Private Woodland Owners

The Department takes a keen interest in woodland owned by private citizens who hold more than 70 percent of the Nation's commercial forests. The Forest Service cooperates with private owners and State agencies in protecting 480 million acres of non-Federal forests against fires, insects, and diseases; encouraging better forest management on 367 million acres of private forest lands; and aiding in the distribution of planting stock for forests and shelterbelts.

Helping Woodland Owners

Under our regular cooperative programs with the States, we gave technical help to 105,000 woodland owners during fiscal 1967. This management assistance covered 6.2 million acres of privately owned

Young Georgia fisherman tries his luck in Oconee National Forest.

Hiking in Willamette National Forest, Oregon.

land from which $22 million dollars worth of forest products were sold.

Forest Fire Control

Non-Federal lands brought under organized protection through the Cooperative Forest Fire Control Program have steadily increased since 1960. Of the 519 million acres needing protection, 480 million, or 92 percent, are now under the program. In 1960, the proportion was only 77 percent. Each year sees an additional 3 million acres come under organized protection.

Forestry Cooperatives

We encourage small forest owners to form cooperatives to improve management and marketing. Forestry cooperative advisory groups have been set up in 31 States. They provide technical aid in organizing new groups, often with the help of regional and area offices and the USDA Committee on Forestry Cooperatives.

A new forestry cooperative in Menahga, Minn., revived a long closed down industry in this small town when it began manufacturing lath and snow fencing recently. The co-op was funded by local citizens and given encouragement through resource and market analyses by State Forestry and Forest Service specialists. It purchased a defunct lath mill at a foreclosure sale conducted by the Small Business Administration. In full production, it will provide a boost to the local economy and a market for local timber resources.

The Forest Service offers many kinds of assistance to tree growers and processors.

For example, a wood-treating plant in Louisiana had orders calling for No. 2 common and better treated timber. The firm had trouble determining the proper grades of timber to be treated. It rejected over a thousand board feet per day as below grade. This involved such a considerable loss that the State forester was called in to see if he could suggest a solution. He in turn called on the Forest Service. It was jointly decided that the employees should be given some training in grading. A team of utilization specialists conducted a brief training course. The grading problem was eliminated at a net benefit to the company of about $90,000 a year.

Our forest products utilization program is now in its fourth year. The case just cited is one of many in which wood processors have benefited from the cooperative efforts of the Forest Service and the State foresters. The program now has 76 utilization specialists, 27 employed by the Forest Service and 49 by the State foresters.

Recreation for Pleasure and Profit

In 1967, an estimated 150 million visitor days to the National Forests were recorded. Each year visitors come in record-breaking numbers to the biggest outdoor playgrounds in America—to drive, hunt, fish, ski, picnic, swim, canoe, and take pictures.

We are constantly planning or building new facilities to keep pace with present and projected visitor needs up to the year 2000.

About half a million persons can now be accommodated on existing campgrounds and picnic areas. The capacity of the 202 winter sports areas is about 307,000 persons. And throughout the National Forests over 193,000 miles of roads and trails lead the visitors to a wide variety of scenic and recreational points of interest.

Wildlife

The National Forests offer superb big-game hunting and sport fishing opportunities under State fish and game regulations.

To enhance these opportunities, habitat management plans are prepared for each administrative unit and for major wildlife species. More than 1,200 plans have been completed. On wildlife ranges, nearly 29,000 permanent transects and 1,200 wildlife exclosures have been installed to study the effects of wildlife use on vegetation and soils. Technical guidance is provided by 100 wildlife biologists.

Our current inventory of fishing waters in the National Forests shows that more than 84,000 miles of streams, constituting more than one-fifth of the cold water streams in the United States, excluding Alaska, produce resident game fish. Over 1¼ million acres of natural lakes, or more than one-half of the cold water lakes in the United States, excluding the Great Lakes, provide a combination of cold water fishing and excellent scenery. In addition, nearly a million acres of man-made reservoirs, supporting cold and warm water fish, are part of the National Forest fishery values.

As hunting and fishing uses increase, there must be a corresponding increase in the productive capacity of the land and waters through habitat improvement. This is generally achieved through special protective or cultural practices or construction projects, mostly done in cooperation with State fish and game agencies under cost-sharing agreements.

Western Skiing is Big Business

A joint report from the Departments of Commerce and Agriculture issued in the spring of 1967 shows that skiing is booming in the West and, from all indications, will continue to boom into the future. Annual skiing use there has tripled since 1955. About 415,000 skiers made 4.3 million ski visits in 1964. They spent $115 million during the season. The joint report predicts 12 million ski visits to western winter sports areas by 1976.

About 80 percent of the existing ski areas in the West are on National Forest lands. These and other developed sites in the future will be a major contributing factor in keeping the ski industry healthy and vigorous. This in turn will mean better recreation opportunities for millions of Americans and a significantly beneficial impact on the local and regional economy.

Wilderness Preservation System

The decades-old Forest Service policy of wilderness protection provided a strong base for the National Wilderness Preservation System set up by the Wilderness Act of 1964. Over 9 million acres of National Forest lands that make up this System are managed by the Forest Service. In addition, 5.4 million acres in 34 Primitative Areas on the National Forests are under study for possible inclusion in the Wilderness System.

In keeping with the schedule set up by the Wilderness Act, one-third of these Primitive Areas had been reviewed by the end of 1967. As a result, 12 additional areas totaling 1,229,208 acres were recommended as suitable for the National Wilderness Preservation System.

NATURAL BEAUTY

Projects specifically aimed at reducing the sacrifice of natural beauty continued to be an important element in our Resources in Action program.

SCS gave increased emphasis to esthetic and environmental qualities of the countryside in all its resource planning and development work.

Thousands of farmers, ranchers, and other rural landowners and operators are incorporating natural beauty as a specific purpose in their conservation plans. Farm ponds and other water conservation and sediment control structures are being built and maintained, adding beauty to the countryside. Technical assistance is being extended to an increasing number of conservation districts which have undertaken reclamation of strip-mined lands and other disturbed areas.

Our roadsides often become ugly because of erosion. Plantings for soil stablization and natural beauty are being made along hundreds of miles of highways and roadsides.

> Plant and soil scientists are working with engineers and landscape architects in Texas to establish a functional cover of vegetation along more than 66,000 miles of highways. There are approximately 25 acres of roadside per mile of four-lane divided highway. Studies are underway to coordinate improved planting materials and characteristics of seedbeds, techniques of planting, and properties of mulching materials.

Further progress is also being made in incorporating natural beauty into the more than 800 small watershed projects now in operation. Since 1965 all recreation facility plans authorized for development on these projects have included specific attention to esthetic values.

To illustrate the superb beauty of the American landscape, we developed in 1966 a set of 16x20 inch color prints of conservation scenes from each State, Puerto Rico, and the Virgin Islands, entitled "America The Beautiful." The pictures tell in an appealing way how soil and water conservation restore and enhance beauty of the rural landscape. During the year, the Government Printing Office sold more than 2.4 million of these prints.

Natural beauty is a popular group activity of Extension homemaker clubs and in 4–H work. In some cases projects are carried solely by 4–H'ers, while others are organized in cooperation with other youth organizations.

> In St. Johns, Ariz., 4–H members took the lead in a joint project involving the Future Homemakers of America, Boy Scouts, and Explorer Scouts. The objectives were to stimulate appreciation for beautiful surroundings and community pride; to attract more people to the area; to provide community identification; and to rid the area of trash and undesirable debris.
>
> The four youth groups initiated the drive with three major activities. They landscaped a courtesy information and rest stop at two entrances to St. Johns on a major highway. They organized and conducted a town cleanup and anti-litter campaign. And they canvassed homeowners to take orders for selected town trees or shrubs to stimulate community planting.

Similar young people projects to enhance natural beauty are carried out in communities all over the land.

Home beautification is not neglected. During fiscal 1967, a team of ARS explorers toured Korea, looking for plants suitable for the United States. They collected more than 500 specimens, including rare lilies, white-flowering azaleas, and a number of low-growing shrubs suitable for planting around the suburban ranch-type house.

Beautifying America begins at home.

September scene.

"Let the land sing with beauty" is our rallying cry. One of this generation's noblest goals is to restore beauty to the countryside, beauty to the American community, beauty to human existence.

Public concern with resource conservation is increasing. This calls for intensified conservation planning at each level of government to better protect the productive land base and to improve all soil, water, forest, range, and related resources.

Responsibility for the wise use of resources is a part of the heritage that reposes with each new generation. Acceptance of this responsibility by a knowledgeable and capable public is a continuing need in the interest of the public welfare and security.

The impact of research and science on agriculture has been almost unbelievable. In the past 17 years, crop production per acre has increased about 45 percent. And this was accomplished with a labor force that diminished almost 50 percent.

In 1950, we produced 2.8 billion bushels of corn on 72.4 million acres. In 1967, we produced more than 4.7 billion bushels on 17 percent fewer acres. In 1950, the average milk yield per cow was 5,300 pounds a year. Today it approaches 9,000 pounds. Our markets for dairy products are now supplied by only three-fifths as many cows as were needed in 1950. The result of this accelerating productivity is that in 1967 one U.S. farmworker supplied the food and fiber needs of more than 40 persons, compared with 15 in 1950.

The impact of agricultural research is felt far beyond the farm. Agricultural research is of crucial importance in man's efforts to create a balanced and diverse environment, in improving human health, and in examining the life process itself.

Few people know that it was USDA scientists who were the first to link an insect vector to the spread of any disease. In tracing the cause of Texas cattle fever to the fever tick, a Department scientist opened the way for the control of such human diseases as malaria, yellow fever, and sleeping sickness.

Few people know that techniques for mass production of penicillin, and subsequent other wonder drugs, were developed in USDA laboratories.

Few people know that research work at the Wisconsin Agricultural Experiment Station led to the discovery of niacin, the cure for pellagra; to the importance of iodine in metabolism; to the discovery that vitamin D could be supplied by direct irradiation of ultraviolet light—a revolutionary finding in basic research and an immediate method for eliminating rickets, not only in farm animals, but also in humans.

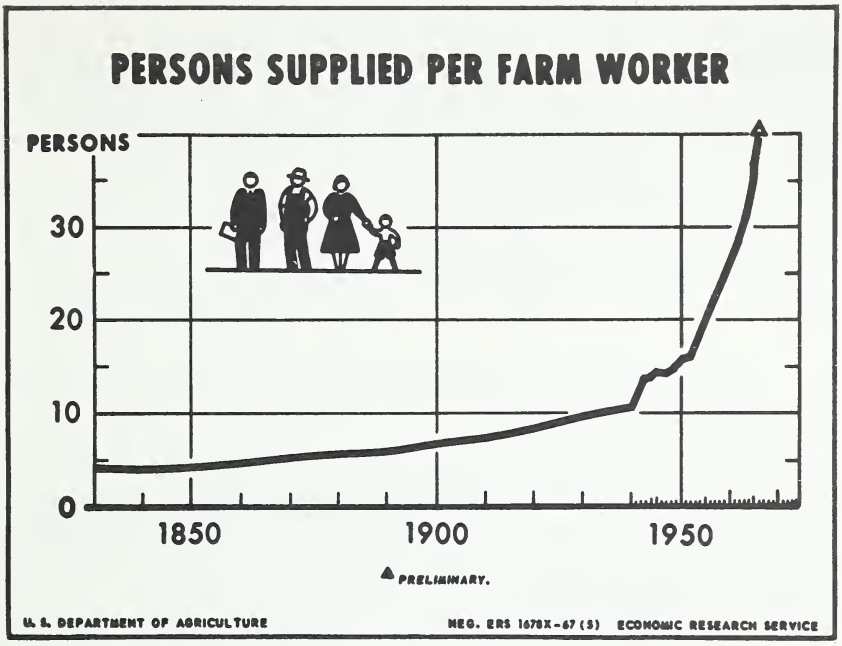
Few people know that it was a researcher at the New Jersey Agricultural Experiment Station who discovered streptomycin, the first of the wonder drugs to show hopeful results in the treatment of tuberculosis.

And few people know that it was the work of agricultural experiment station researchers in North Dakota and later in Wisconsin that led to the isolation and identification of dicumarol, a compound now widely used in treating circulatory disturbances in man. Some estimate that use of this drug saves the lives of one of every three Americans stricken with coronary thrombosis.

Despite the achievements of agricultural science, the research job is far from done—and probably never will be done. We look to research in the years ahead to furnish the technical innovations needed to maintain abundance and increase farm income, to help win the war on hunger, to build better communities of tomorrow, to conserve natural resources, and to make our Nation and the world better places to live.

PIONEERING RESEARCH

Our scientists carry on basic research aimed at expanding man's knowledge of his world. At the USDA Plant, Soil, and Nutrition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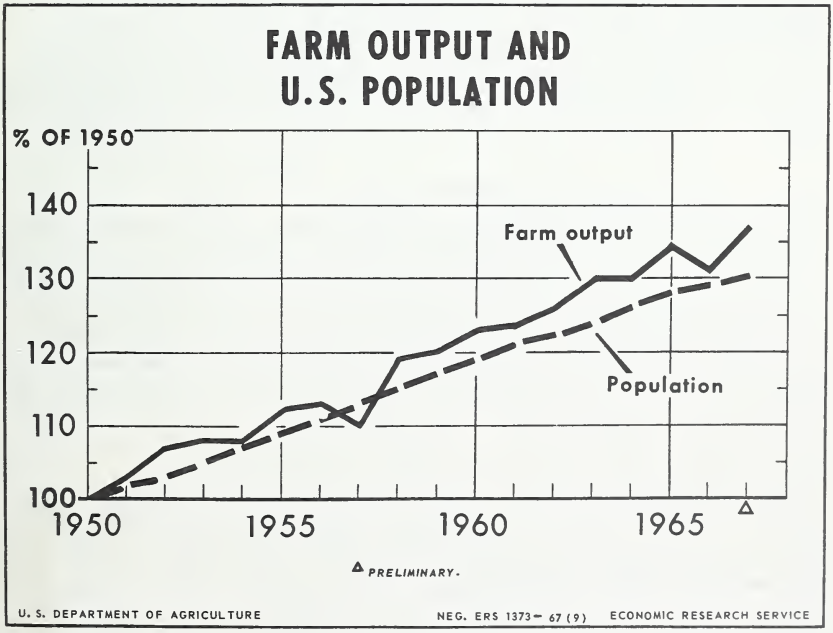
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Laboratory, for example, our Agricultural Research Service scientists are trying to solve the mysteries of protein synthesis. In 1965 and 1966 they scored major scientific breakthroughs by determining the structure of two nucleic acids. The composition of nucleic acids is what shapes man, animals, and plants into likenesses of their ancestors. Greater understanding of nucleic acids may lead to control of cancer and genetic defects.

During fiscal 1967 we opened a new pioneering laboratory at Beltsville to study the biochemical processes that occur when a disease or organism attacks a plant. By gaining a basic understanding of resistance, plant breeders may be able to incorporate genetic sources of resistance into new varieties more rapidly and effectively than at present.

Our pioneering research program, which attempts to gain new knowledge through interdisciplinary effort, was begun in 1957 and now consists of 25 laboratories.

A team of ARS geneticists are plotting a "map" of the chromosomes of dairy cattle. They have discovered the location and relationship of four of the many genes that make up the map. Although many thousands of genes may exist in dairy cattle, the four thus far established serve to orient the map and will make the rest of the job easier. The completed map will help farmers and researchers do a better job of selecting breeding stock.

ARS meteorologists are studying the relationships of air motion, sunlight, field surface, and plant growth. Plants seem to grow best in light winds and bright sunlight. Sunlight has an effect on wind, because heat rising from the earth's surface creates turbulence. When these interrelated factors are understood, scientists may be able to plan the geometry of a field surface to create ideal growing conditions.

Other scientists are studying the evolutionary history of bird life. This work could eventually lead to new poultry hybrids and to preservation of endangered species of bird life, such as the whooping crane.

Shell-Less Eggs and Christmas-Tree Corn

Hens that lay shell-less eggs, corn plants shaped like tiny Christmas trees, and tremendous increases in agricultural efficiency are now being forecast. The peaks of agricultural productivity are far from being reached, and scientists see several routes that could lead to new heights.

One approach would be to get hens to produce eggs in "membrane envelopes" suitable for packaging. These would be shell-less eggs. Eighty percent of the time and 50 percent of the energy which the hen now uses in egg production goes to produce a limestone container for each egg. Shell-less eggs would be sold in a broken out or processed form, not in cartons as they are today.

Corn plants of the future might be shaped like Christmas trees to capture the maximum of solar energy for photosynthesis. Such plants would have a high grain to stalk ratio with leaves almost vertical at the top of the plant and nearly horizontal at the bottom. U.S. corn yields, which now average about 72 bushels per acre, could theoretically reach 500 bushels through plant redesign, and improved use of fertilizer and moisture.

While looking far into the future, however, research does not neglect the present and the immediate tomorrow.

USDA-sponsored Dairy Herd Improvement Associations are constantly helping dairy farmers to greater efficiency and improved returns. Participating farmers send records of their herds' milk production to USDA statisticians who process the information by computer and preserve it on magnetic tape. This enables farmers to select good breeding stock and provides a basis for comparing feed consumption with milk production of individual animals. DHIA members averaged $219 per cow more for their milk during fiscal 1967 than non-DHIA producers.

Near Hastings, Nebr., a 35,000 acre plot, that was formerly the site of a World War II ammunition dump, is being converted into pastures, barns, and laboratories for a new Meat Animal Research Center. The facility will house 10,000 sheep, 5,000 beef cattle, and 3,500 hogs. One goal of the Center is to reduce the fat content of meat from 20 percent to 5 percent, thus saving half a billion dollars annually in grocery bills and farm feeding costs.

Breeding research promises to make more lamb chops available at the Nation's meat counters. Researchers are selecting ewes for their ability to produce twins and conceive twice a year. The new strain of sheep, appropriately called "Morlam," would product six lambs every 2 years.

New, better yielding, disease resistant crop varieties are developed every year by USDA scientists in collaboration with State agricultural experiment stations. New varieties released in fiscal 1967 included:

Coastcross 1, a cross between a bermudagrass from Kenya and coastal bermudagrass, the variety grown extensively in the Southwest. Steers fed on the new variety gained up to 30 percent more than animals on standard forage.

Oromonte or "golden mountain" potatoes, especially suitable for making potato chips.

Vale strawberries, a midseason, winter hardy, rust resistant variety adapted for the Pacific Northwest.

Our plant breeders also found a mosaic-resistant form of wild lettuce and succeeded in crossing it with commercial varieties. Mosaic is a major virus disease of lettuce. The new variety could save commercial vegetable growers millions of dollars.

Our scientists also found that grain can be planted directly in coastal bermudagrass, a forage crop grown extensively in the Southeast. This will give Southeast farmers two crops where one grew before. It will also help prevent soil erosion by furnishing a year-round cover crop.

New Uses—a Never-Ending Search

We are continually seeking new uses for agricultural products for the benefit of producers and consumers.

Food and fiber in new forms and adapted to new uses issue from our research laboratories in a continuing stream. Each year adds new products for the convenience and comfort of our people. They are quickly installed as part of daily living, so much so that after a short time it becomes difficult to appreciate that they have not always

been at hand. This has been the story with frozen concentrated fruit juices, instant potatoes and other vegetables, fruit and vegetable flakes, wash and wear fabrics, stretch cottons, and shrink resistant woolens.

A number of significant further advances were made during 1967.

Some foods are selected as much for their color and shape as for their flavor and nutrition. The green bean is a prime example. It adds a dash of color to a serving in contrast to the somber brown of meat and the flat white of potatoes. For years agricultural scientists have been striving to produce a green bean that will combine good taste and nutrition with lively color. Persistent effort has finally resulted in a new product from the bean research laboratory in Twin Falls, Idaho, that will provide the processor with a very uniform product of good quality and the housewife with a "straight from the garden color" in her table setting.

Other scientists have found ways to use whey, formerly a waste byproduct of the cheesemaking industry, in many foods. This adds valuable nutrients to the foods and eliminates the problem of disposing of the whey.

Researchers found a way to make celery oils with a more characteristic aroma than oil produced from celery seed. The new process uses the leaves, ribs, and culled stalks of celery that were formerly wasted.

Other research has developed a tasteless, colorless fat from cottonseed oil which may change the packaging of nuts, meats, and other foods. The fat is sprayed on the product in a very thin film that locks out oxygen and retards rancidity for long period.

Soybean and linseed oil derivatives have been converted into a new raw material for making adhesives, films, plasticizers, and plastics.

Researchers found a new way to process tomatoes to almost any consistency—from thin juice to a firm gel—by adjusting the acidity when the tomato is crushed.

A new process called "compacting" makes cotton stretch fabrics stronger and less expensive than present stretch cottons.

Our textile researchers also came up with a chemical treatment for permanent press garments that may double the durability of the fabric. Cuffs made from treated cotton withstood 22 accelerated laundry cycles before showing signs of wear. In untreated fabrics holes appeared after only 11 cycles.

We are seeking to put a flame resistant finish at lower cost into Cotton Flote, the Department's improved cotton batting. Cotton batting has lost much of its market as a padding material since the introduction of foam rubber and polyurethane foam.

By adding the safety of flame resistance to Cotton Flote, our scientists hope to recapture much of cotton batting's lost markets in the furniture, automotive, and bedding industries.

Cereal flour is used in manufacturing paper. By adding a chemical to the flour our researchers gave it a positive charge, making it adhere well to negatively charged wood pulp fibers and producing paper of added strength and quality. Cereal flour is cheaper than most other materials commonly used as additives in papermaking.

Our scientists have found a way to convert fatty acids from inert to highly active compounds. This means that animal fats can be combined with other substances and may some day become ingredients in plastics, medicines, textiles, leather, and food.

We have succeeded in making nylon from soybean oil. The new material absorbs less moisture than most nylons now used in the United States. It should be especially useful in manufacturing parts for pumps, water meters, and washing machines.

The Reversible Tractor

Scientists of the Iowa Agricultural Experiment Station have developed a "versa-tractor." The controls and operator's platform are mounted on a swivel so that the driver can face the direction of travel whether operating forward or in reverse.

In the forward position, the tractor can pull plows, disks, and cultivators in the conventional manner. By rotating the control platform 180 degrees, the operator has good visibility of all machine functions as well as complete control over ground speed and adequate means of starting and stopping the mechanism.

In the reversed position, a number of other machines such as loaders, windrowers, combines, and corn harvesters are compatible with the versatractor. A picker-sheller, for example, is mounted on the tractor's three-point hitch with a "quick-coupler" and an auxiliary hydraulic attaching point under the tractor's engine. Hookup takes only about 1 minute. Tractor and picker-sheller thus become a self-propelled harvesting machine. Rear mounting permits the machine's gathering mechanisms to gather the crop before the tractor runs over it. Many fine points of design need further refinement, but the concept is sound and the versa-tractor could become the major farm power unit.

Illustrating the wide scope of research is the recent use of the laser in agriculture. Our scientists have built a ditching machine that can be controlled by laser beam, making possible uniform ditch depths and grades in spite of irregularities in the surface of a field. A laser beam is directed across the field. A sensing device on the ditching machine then focuses on the beam and adjusts ditching depth as necessary. This system of automatic grade control will give farmers in humid regions a fast, efficient method of installing field drains. It should also prove useful in highway construction, community sewer installation, and other digging and earthmoving jobs.

Marketing Research

Research produces better marketing methods which cut costs for both farmers and consumers.

We have developed electric stockyard gates that speed the movement of livestock through markets. The gates help prevent injuries to livestock and cut labor requirements in half.

Marketing researchers also seek ways to get products to consumers in better condition. A recent development is a radically new machine, called the unitized brush-sizer, that nestles apples between two soft brushes during sorting, brushing, and sizing, for maximum protection from bruising.

Our researchers have also designed special trays of molded pulp for packaging pears at the shipping point. They reduce bruising while providing an attractive display package.

Researchers tested a hot bath for fresh fruit during the year. By dipping fresh fruit in hot water they killed bacteria that sometimes ruin or discolor the product. The treatment was used successfully on

cantaloups, peaches, mangos, and lemons, and is being tried on other commodities.

Other marketing research has revealed that sound can be used to measure firmness and indicate the quality of fruits and vegetables. This method may eventually be used by producers to determine when to harvest their crops for top quality and by packers to determine when to take production out of storage and put it on the market for peak flavor.

We have found that we can nearly double the normal storage life of some fruits by controlling storage atmosphere. After 9 weeks in storage atmosphere of 1 percent oxygen and 5 percent carbon dioxide, peach and nectarines were juicer, had better color and flavor, and more closely resembled freshly harvested fruits than similar fruits stored in normal atmosphere.

Helped by a $10,000 grant from the Department of Commerce, our researchers are working on an improved multipurpose van that can be hauled by truck, railroad flatcar, plane, or ship, and can maintain different temperatures to preserve different types of food. The van principle, already in use, promises to revolutionize distribution.

THE FIGHT AGAINST PESTS AND DISEASES

Regulatory workers wage a steady campaign against crop and livestock diseases and pests.

Idaho, Michigan, Oregon, and Washington became free of hog cholera during the year, joining Montana, Nevada, Alaska, and Vermont in this category. We expect to wipe out hog cholera in all 50 States by 1972.

Eradication of the boll weevil is proceeding in the High Plains of Texas. The eradication program, a joint effort by Texas, Mexico, and USDA, got underway in 1964 with chemical treatment of 290,000 acres of cotton. Now only about 80,000 acres require treatment.

We are seeking ways to reduce insect damage in stored products without using chemicals. Replacing the air in storage bins with carbon dioxide or nitrogen has been effective against several types of beetles and moths.

In the spring of 1967, officials of USDA and the Atomic Energy Commission dedicated the world's first large-scale grain irradiator. The device, containing cobalt 60 as a source of radiation, will be used experimentally to kill insects in grain and other stored products.

Safer Pest Controls

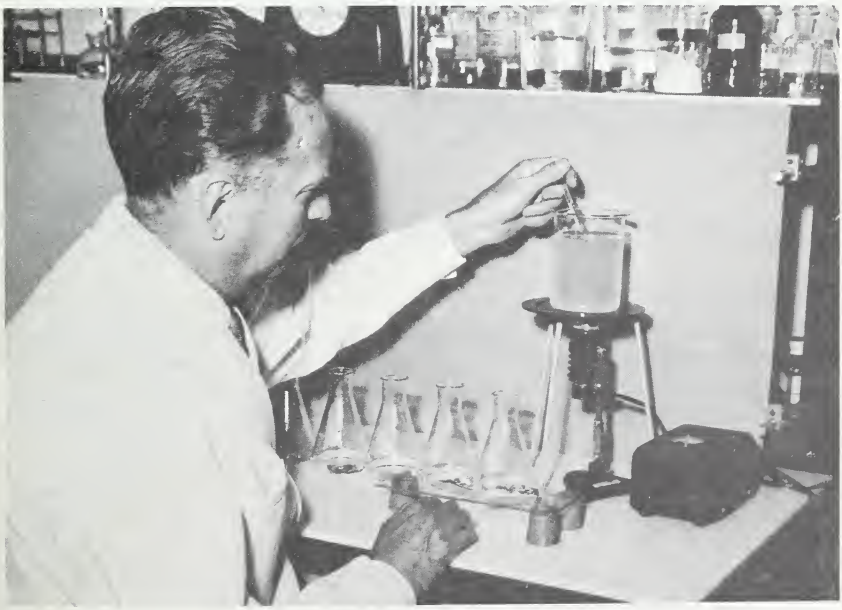
We are deeply committed to efforts to develop and use safer, more effective pest control measures. These activities involve active pest control, regulation of pesticides, monitoring of residues, research for safer pesticides and education, and information on the use of chemicals.

During fiscal 1967, the Department reviewed over 47,000 pesticide labels to insure conformance with new regulations.

We initiated a National Soils Monitoring Program on pesticides involving 15,000 locations.

We developed an insect resistant cotton bag which will reduce shipping and storage losses.

Aerial view of National Animal Disease Laboratory at Ames, Iowa.



Testing for pesticide residue.

We conducted training conferences, schools, and workshops on the safe use of pesticides. These were attended by an average of 10,000 persons in each of 12 States.

We distributed more than 200,000 packets, on request, containing information on pests and their control to science and biology teachers and students.

Our pesticides-related activities are coordinated with those of other Federal and State agencies, and we are also working with other countries to consider the regulation of pesticides and their possible impact on consumer safety and the quality of the environment.

We are conducting an intensive search for a suitable substitute for DDT that will be effective against forest insects without contaminating the environment.

Substitutes for DDT already tested include malathion, Zectran,* and pyrethrum. Malathion proved effective in some Western forests but unsatisfactory in other areas. In laboratory and preliminary field tests Zectran showed promise as a safe and effective insecticide against spruce budworm, but the spray method was unsatisfactory. Under ordinary spray methods the fine droplets tended to sift through the tree canopy to the ground without contacting the insects. We are attempting to develop new, aerosol-type spray equipment aimed at reducing droplet size to within a range of 1–50 microns.

Pyrethrum, one of the safest and most effective insecticides known for control of household and garden pests, breaks down too rapidly in sunlight and air, so that its effect on forest insect populations is limited. We believe breakdown can be retarded, thus making pyrethrum feasible for forest spraying.

Sex Attractants to Combat Beetles

Supported in their research by the Forest Service, scientists at the University of California and the Stanford Research Institute have been seeking to reproduce the lures that enable insects to locate one another for mating. They recently synthesized a major component of the western pine beetle's sex attractant and successfully lured insects to a specific spot. This is a first step toward better control of a major tree killer that annually damages 1 billion board feet of mature ponderosa pine.

Such breakthroughs promise more economical and effective control operations, and may eventually reduce the use of toxic sprays significantly.

Other Safeguards to Health

We protect human as well as pet and livestock health by controls over the biological products used against animal diseases, some of which are transmissible to man. In fiscal 1967, ARS checked on the production of billions of doses of veterinary biologics and found that 96.1 percent of the serials tested were pure, safe, and potent.

Salmonella, an organism that causes food poisoning, was the subject of intensive research. We joined the Department of Health, Education, and Welfare in requesting the National Academy of Sciences-National Research Council to study all aspects of the salmonella problem. This study will furnish valuable guidance in protecting our food supply from contamination and safeguarding the Nation's health.

*Use of a trade name does not imply endorsement by USDA over similar products not mentioned.

ARS botanists, under the sponsorship of the National Cancer Institute, are collecting and analyzing the world's plant resources in search of anticancer substances. In 1967 they discovered that extracts of the bark and wood of *Camptotheca acuminata*, an otherwise undistinguished tree, destroyed cancer tumors. The tree originates in China, and only a few specimens exist in this country. A new planting of 1,300 seedlings established in Chico, Calif., will make further testing possible.

SOIL AND WATER RESEARCH

Soil and water research is a highly important part of our total program. The following are a few illustrations of the work being done.

Soil Research

Soil erosion strips fields of topsoils and deposits it as sediment in streams and waterways. As one way to fight soil erosion, our scientists are working on a new method of terracing. This involves using earth-moving equipment to create broad, uniform-width benches that can be easily tilled with modern equipment but will not erode.

Another project seeks to find out just what happens when soil erodes. Fluorescent beads are sprinkled on a test plot and simulated rain is applied to the plot. Training an ultraviolet light on the plot, researchers can then study the pattern of bead movement which shows how the soil particles move.

> The economy of a farming community in central Minnesota appears headed for recovery as a result of a researcher's efforts to solve problems of wind erosion. His use of a wind tunnel to pinpoint the erosion potential of local soils helped farmers learn how to grow high-grade vegetables. A canning company is now contracting with the farmers to grow string beans. Pilot studies indicate that income from the beans will be about $150 per acre, nearly double the return farmers have been getting on the same land from corn.

Our ARS Hydrograph Laboratory at Beltsville recently published a battery of statistics, gathered from 200 experimental watersheds throughout the country. The data will provide a basis for analyzing rainfall-runoff relationships by computer and help farmers plan cropping systems that prevent erosion.

"Paving" farmland like freeways to produce better crops in less time may sound ridiculous, but it works. Scientists at the University of Arizona Cotton Center have demonstrated that above-average yields from early plantings can be obtained by applying a thin band of asphalt emulsion to the seedbed. The black surface absorbs additional solar heat, conserves moisture, and prevents soil crusting. Seedlings emerge readily through the film. Increases of over 100 percent in germination and survival of seedlings have been obtained, readily absorbing the costs of supplies and application.

In another area of research grass varieties that survive up to 3 weeks of flooding have been developed for planting in flood detention reservoirs. These grasses will give farmers an additional source of forage.

Saline soil is a frustrating problem of irrigation agriculture in some areas. We are attacking the problem through development of salt-tolerant plants. Our scientists have succeeded in grafting salt-sensitive

grapevines to salt-resistant roots. This achievement could boost production in much of California's table-grape country.

Water Research

As we indicated in the "Resources in Action" section, stream sedimentation is a growing threat to the Nation.

An atomic sediment gauge tested by our researchers is now on the market. It measures sediment by sending a low-power radioactive wave through water. The data are relayed to an automatic recording device on shore. This eliminates hand labor and maintains a continuous picture of the condition of a given stream.

Sprinkler irrigation is depleting groundwater supplies in the Midwest, the Southwest, and other semiarid parts of the country. Unless we find ways to recharge these supplies, expensive irrigation equipment will someday be worthless.

An ingenious technique developed in 1967 can make the playa lakes of Texas, New Mexico, and Oklahoma available as new sources of water. Playa bottoms are impermeable hardpan, and most of the water that collects in playas evaporates. By drilling wells around the playas, however, we can return the water to underground reservoirs. Inexpensive chemicals collect the sediment into small lumps in the water to keep the wells from clogging.

In Colorado a system of gravel mulches was devised. It consists of large areas of low-value land covered with sand or gravel to soak up rainwater.

Another water project recently initiated promises direct benefits to city users as well as farmers. It uses vegetative filters to reclaim sewage effluent. Cheap, safe reuse of water for both farm and city is the goal of the project.

We have also developed an automatic irrigation system that is controlled by sensors buried in the soil. These sensors turn irrigation water on or off to suit the exact requirements of the plants being grown.

Home gardeners and truck farmers are constantly striving for early crop maturity and harvest. One of their chief concerns is the fluctuations of temperature, particularly the day-to-night-to-day cycles. A new water mulch idea, developed by USDA and the Idaho Experiment Station, may solve the problem. Plastic bags filled with about 4 inches of water applied to cover the soil between planted rows of corn and beans not only hastened maturity but increased yields of sweetcorn 75 percent. The water mulches act as a heat sink during the day and a heat source during the night.

FOREST RESEARCH

Forest research helps protect timber supplies against pests, diseases, fire, and other hazards. It also seeks new uses for forest products.

An Electronic Eye Detects Forest Fires

The Forest Service has developed airborne electronic eyes that enable small fires to be pinpointed by high-flying aircraft even when visibility is obscured by darkness, smog, haze, or smoke from other fires.

An infrared line scanner coupled to a display unit permits images of fires and terrain to be viewed on a screen. A rapid film processing unit

records the imagery. A target discrimination module flashes a red light when a hot target is sensed by the scanner and marks the imagery to show its location. The precise course of the plane during fire detection patrols is followed through a radar navigation system.

During the 1967 forest fire emergency in the Northwest, the Forest Service used a specially equipped flying laboratory to detect more than 150 fires. The experimental missions were made at night over forests in Montana, Idaho, Oregon, and Washington. We are aiming at early development of a fully operational system.

The Promise of "Silage Sycamore"

The normal pulpwood rotation for sycamore under current methods of growth and harvest is 30 years. Research has shown how to reduce harvest interval to 5 years, how to get yields of 4 to 5 cords of pulpwood per acre per year, and how this timber crop can be harvested with the same farm implements used in harvesting corn silage.

This revolutionary method of growing and harvesting pulpwood was developed by the Forest Service and the Georgia Forestry Commission and the University of Georgia. It is called Silage Sycamore because the sycamore was used in the first experiments.

Research and a Booming New Industry

The infant southern pine plywood industry indicates how research can improve the economy and environment of rural communities by attracting and keeping forest-related industries in rural areas. In the past 3 years we have seen the establishment of 30 new plywood plants from Delaware to Texas and the creation of new jobs for thousands of people. Many additional thousands will benefit from this new, research-created southern industry as it continues its projected growth.

Test Tube Trees

The tree of tomorrow may be a test-tube baby—planted, hatched, hardened off, and transplanted in a field all within 6 weeks. The advantage over Mother Nature's own way is the right number of trees in the right place at the right time. Forest scientists at the University of Minnesota, with industry cooperation, have developed a high-impact styrene tube, 3 inches long, open at both ends, and loaded with native soil for the "tubelings" which are started in greenhouses. After several weeks they are set outside for conditioning, then planted by punching a hole into the soil for tube and all. With a little experience, a man can plant 1,000 to 2,000 trees per day throughout the growing season. Planting shock is minimized, and the tubes provide some protection against drying out. If the initial promise of the method is realized, assembly-line production of forests may become commonplace.

RESEARCH ON AIR POLLUTION

Scientists have long suspected that toxic fumes emitted from industrial complexes destroy trees and other vegetation. After years of investigation Forest Service researchers traced the decline of white pine on the Cumberland Plateau in Tennessee to gas emissions from nearby smokestacks.

Research in air pollution is relatively new and more information is needed both on the pollutants and on the role of trees and other vegetation as detectors and alleviators of dangerous airborne pollutants.

We have established a Plant Air Pollution Laboratory at Beltsville, Md., where we are studying just what pollutants do to ornamentals and other plants. Researchers are screening and identifying plant varieties that appear to resist pollutants.

Related studies are being conducted at the just completed Phyto-Engineering Laboratory at Beltsville. This laboratory with its entirely controlled environment enables us to "bring the outdoors indoors."

As our information grows we will, in time, apply management techniques to air resources, as we do to land and water resources, thus assuring clean, safe air for the total environment.

Besides moving toward solutions to some of our present-day environmental problems, scientists in the laboratory are developing techniques that may someday be used in our first extra-terrestrial colony, where people will live and perhaps grow food under a controlled environment.

This brief listing of some of the recent achievements and potential accomplishments of agricultural research offers just a hint of the wonders to come—and not far off.

As we described in the section, "Growing Nations—New Markets," science is already at work here and all over the world helping to improve irrigation, drainage and reclamation, pest control, the use of fertilizers, hybrid seeds, and new plant varieties. Our researchers are exploring new ways to supplement the diets of protein-starved people.

No one knows exactly what agricultural science will accomplish during the remainder of this century. We do know that the kind of agriculture we will have in this Nation—and the kind of world we will live in—will be determined in great measure by how far research advances and by how well we put our advancing knowledge to use.

THE SIXTH GOAL: NEW DIMENSIONS FOR LIVING

The USDA provides more than 50 different categories of services to the general public—more than any other agency of Government. In 1967, as in other recent years, about 90 percent of the Department's man-hours and more than two-thirds of its expenditures were devoted to services of primary benefit to the general public.

Broadly speaking, all the USDA programs and services are directed toward improving the quality of living, or as we express it, expanding the dimensions of living. Obviously, however, the major thrust of the Department's "better living" activities is in the direction of food abundance and food quality with the aim of better nutrition—and as a result improved health, increased vigor, and rising productivity for all our people.

COST OF U.S. FOOD RELATIVELY LOW

Food, long one of the Nation's best bargains, was an even better bargain than in 1960.

Food expenditures in 1967 totaled more than $96 billion, up from $93 billion in 1966. This increase, however, was only about half as large as the 8 percent gain a year earlier, and it was much less than the 7 percent increase in disposable personal income during 1967. The percentage of income spent for food, consequently, dropped to a new low of about 17.7 percent compared with 18 percent during 1966, 20 percent in 1960, and 26 percent in 1947.

Retail food prices during the first half of 1967 were lower than in the second half of 1966. But prices began rising during the summer, partly due to seasonal factors, and continued strong during the final months of the year when supplies of some important foods decreased and marketing costs reached new highs.

For the year, retail food prices averaged 1 percent above 1966. Higher prices for food eaten away from home were largely responsible, rising by 5 percent. Prices for food purchased for use at home declined less than 1 percent.

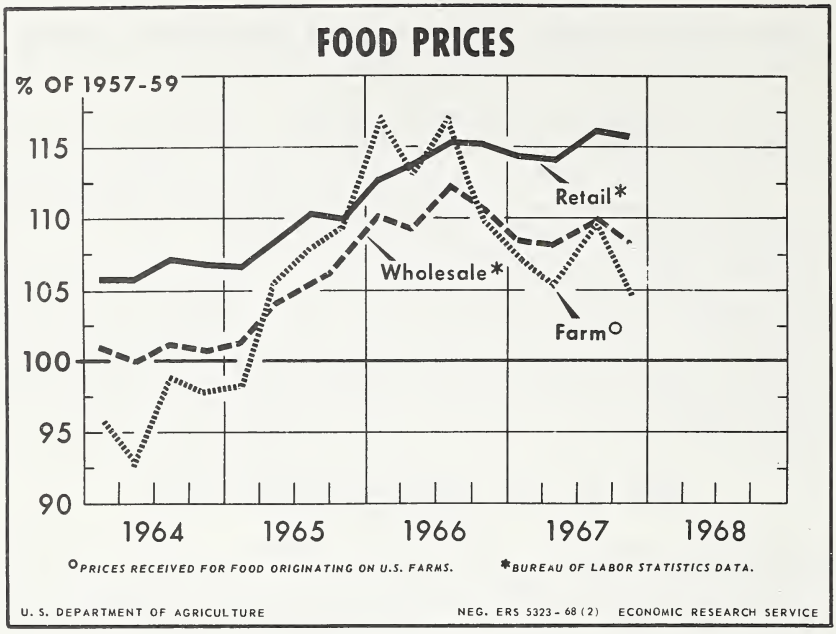
As has usually been the case in recent years, food prices had a moderating effect on the overall Consumer Price Index. The price of nonfood consumer items rose about twice as much as food prices. In fact, as was pointed out earlier, prices received *by farmers* for food products declined during 1967.

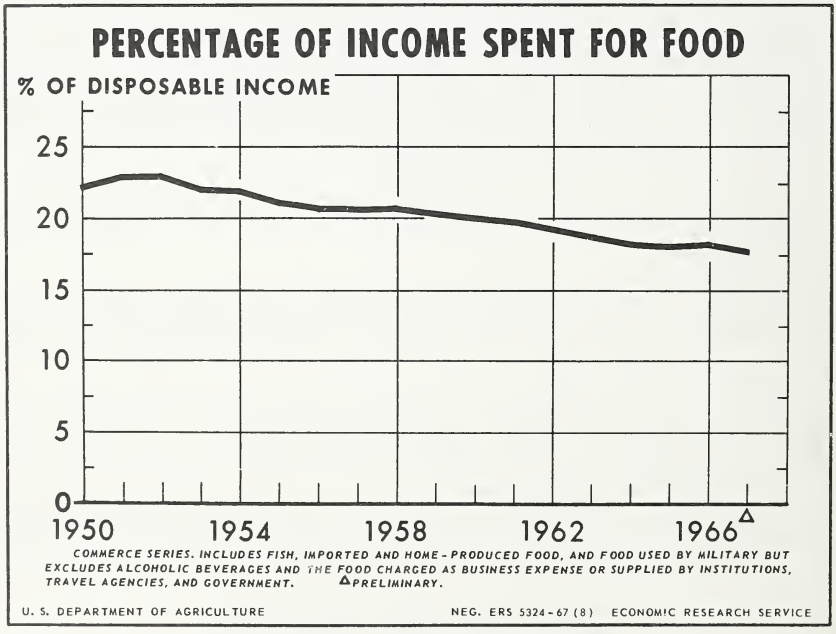
Per capita food consumption increased about 2 percent in 1967 compared with 1 percent in 1966. Military procurement of food also rose but less rapidly than a year earlier.

People ate more pork, poultry, eggs, citrus fruits, frozen vegetables, dry edible beans, and processed potato products per capita in 1967, but less veal, lamb, dairy products, animal fats, non-citrus fruits and melons.

FOOD AND THE CONSUMER

Food usage has changed considerably in the past three decades, and even to some extent during the past decade. Today we can choose from 6,000 to 8,000 different foods. And we buy more higher quality foods.


FOOD PRICES
% OF 1957-59
115
110
105
100
95
90
1964
1965
1966
1967
1968
Retail*
Wholesale*
Farm○
○PRICES RECEIVED FOR FOOD ORIGINATING ON U.S. FARMS.
*BUREAU OF LABOR STATISTICS DATA.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5323-68(2) ECONOMIC RESEARCH SERVICE


PERCENTAGE OF INCOME SPENT FOR FOOD
% OF DISPOSABLE INCOME
25
20
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5
0
1950
1954
1958
1962
1966△
COMMERCE SERIES. INCLUDES FISH, IMPORTED AND HOME-PRODUCED FOOD, AND FOOD USED BY MILITARY BUT EXCLUDES ALCOHOLIC BEVERAGES AND THE FOOD CHARGED AS BUSINESS EXPENSE OR SUPPLIED BY INSTITUTIONS, TRAVEL AGENCIES, AND GOVERNMENT. △PRELIMINARY.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5324-67(8) ECONOMIC RESEARCH SERVICE

Per capita consumption of beef has gone up 24 pounds since 1957–59. The beef industry has increased its total output by about 50 percent and doubled its production of Choice grade.

Poultry consumption per capita has gone up 37 percent since 1957–59, and we are also buying larger quantities of cheese, frozen fruits, and vegetables.

A major factor in enabling consumers to buy food for a smaller part of their income is the increased productivity of our farmers. In 1967 output per man-hour on the farm was about two-thirds larger than in 1957–59.

The productivity of food marketing workers also rose. Despite the swelling volume of food and services, the number of food marketing workers has not risen significantly in the past 10 years. And, though hourly earnings have climbed about two-fifths, increased productivity has kept the rise in labor costs, per unit of product marketed, to about 14 percent.

Retail food prices like prices in general have increased since 1957–59. As of early 1968, the Consumer Price Index for All Food showed a rise of 17.4 percent over 1957–59, compared with a rise of 19.0 percent for all consumer items.

Prices of many other goods and services have climbed much more sharply. Medical care was up 41.9 percent, footwear 29.1 percent, reading and recreation 23.0 percent, and public transportation 36.2 percent.

The rising price of food is influenced considerably by "eating out" prices.

As of early 1968, prices of food at home had risen 14.2 percent since 1957–59, compared with a rise of 33.3 percent for restaurant meals. Prices of meals away from home have gone up steadily and more than twice as fast as food prices at the grocery.

Eating out has become almost a pattern of life for millions of Americans. A joint industry-USDA survey conducted in 1966 indicates that 371,000 public eating places and institutions made about 104 million sales a day, representing meals, snacks, or beverages served to customers, not necessarily different individuals. Even with a substantial allowance for double or triple counting of the same person, a significant proportion of our population is served by this market. And this does not include millions served daily in the military services and under school lunch and other programs.

Although "convenience" is often blamed for the food price rise, not all convenience foods are more expensive than their home-made counterparts. A recent study shows that about 25 percent of typical convenience foods are less expensive than home-prepared foods. Seven typical meals using convenience foods took only one-fourth as long to prepare as the same meals fully prepared at home. By using the average convenience meal a saving in cost was realized when a homemaker's preparation time was valued at a wage comparable to that of a maid.

The steady increase in the quantity of food that could be purchased for a given quantity of labor is demonstrated by the following table:

Quantity of each item that could be purchased with one hour of factory labor, United States, selected periods of time

Item	Unit	In 1929	In 1957–59	In 1966	In 1967
Bread, white	lb.	6. 4	11. 0	12. 2	12. 6
Round steak	lb.	1. 2	2. 1	2. 4	2. 6
Pork chops	lb.	1. 5	2. 4	2. 6	2. 8
Bacon, sliced	lb.	1. 3	2. 9	2. 8	3. 4
Butter	lb.	1. 0	2. 8	3. 3	3. 4
Cheese	lb.	1. 4	3. 7	3. 2	----
Milk, fresh (del.)	qt.	3. 9	8. 4	9. 7	----
Eggs, fresh	doz.	1. 1	3. 7	4. 5	5. 7
Oranges	doz.	1. 3	3. 2	3. 4	3. 7
Potatoes	lb.	17. 0	34. 8	36. 1	37. 9
Tomatoes, canned	#303 can	4. 4	13. 4	15. 3	14. 5
Margarine	lb.	2. 1	7. 3	9. 4	9. 9

In no other country in the world can consumers get such an bundance of high quality food for such a small proportion of their income.

Nevertheless, many of our people have inadequate nutrition. Our most recent research indicates that only half of our people meet or exceed the requirements for "good" diets. One-fifth have "poor" diets. While nutritional inadequacy is greatest in low income households, high income does not assure good nutrition. This is a problem of education as well as income.

SHARING FOOD ABUNDANCE

Our goal is to close the nutrition gap within the next five years. Food programs are already helping many millions to improve their diets—among them the elderly, the unemployed, the disabled, mothers left to rear children alone, and children in schools and institutions.

National School Lunch Program

More than 3.1 billion lunches—each meeting USDA nutrition standards for the "Type A" lunch—were served to over 18.5 million children in nearly 73,000 schools in fiscal year 1967. About 12 percent of these lunches were offered free or at reduced rates to needy children, while the average cost to others was less than 30 cents. Another 3.5 million children benefited from commodities donated to other school feeding programs.

More than 142,000 children received nourishing school lunches under the special Section 11 provision of the National School Lunch Act, which provides extra assistance to needy schools in economically distressed areas. State and local officials made effective use of the $2 million appropriated for this special aid to help start and maintain lunch programs that could not have operated otherwise in these needy schools.

Proceeding on the theory that you can't teach a hungry child, the National School Lunch Program will attempt in the year ahead to

These children are enjoying a hot, well-balanced school lunch.

Food Stamps will buy food at this store.

reach more communities, more schools, and more children to provide them with a nutritious lunch as an aid to boosting them up the educational ladder toward a brighter and healthier future.

Special Milk Program

Children in about 95,000 schools, child-care centers, summer camps, and orphanages got extra milk at reduced cost in fiscal 1967, through the Special Milk Program. Children in especially needy circumstances received their milk free. USDA encourages participation in this program by reimbursing participating schools and institutions for part of the cost of each half-pint of milk they serve.

The 3 billion half-pints served under the program, coupled with that required to be served with lunches in the National School Lunch Program, amounted to over 6 billion half-pints—more than 5 percent of the Nation's annual nonfarm fluid milk consumption.

Other Child Nutrition Programs

The Child Nutrition Act of 1966 was landmark legislation, designed to close some major child nutrition gaps revealed by 20 years' experience with the National School Lunch Act. It enables us to bring nutritious lunches and breakfast programs to school-age and preschool children from needy families and those who must travel long distances from home to school.

A pilot program was started in January 1967, in which a peak of 80,000 children were served breakfast in selected schools. To understand the importance of this new program, one need only read excerpts from some of the letters sent to administrators of school food services:

> "I've had students tell me they never had a breakfast before we started this project," said one Kentucky principal.
>
> "The students are more alert now that they're getting something to eat," a teacher reports.
>
> "Sometimes I think breakfast at school is a crazy idea, but I eat because I'm always hungry in the mornings," explained one schoolboy.

During fiscal 1967, we also cooperated with the Office of Economic Opportunity in supplying available foods, from our direct distribution program, for supplemental help to Head Start Programs—designed to prepare some 500,000 preschool children for an easier start into the lowest grades of State educational systems.

Food Stamp Program

This program helps the needy help themselves, and at the same time strengthens the economy of the communities in which it operates by increasing retail food sales. One of the outstanding values of the Food Stamp Program is that it enables low-income families to buy the food of their choice at the store of their choice at greatly reduced prices. An extremely low-income family of six members, for example, can get $72.00 worth of food stamps per month for an investment of only $3.00.

During 1967 we added 371 project areas to the program so that at the year's end 2.2 million persons in 848 areas in 41 States and the District of Columbia were participating. This compares with 1.3 million persons in 477 areas a year earlier.

Substantial progress was made in enlisting State, local, and private agencies to carry out food and nutrition educational programs for food

stamp families. This was accomplished through local nutrition education committees and Community Action Programs of the Office of Economic Opportunity.

The program continues to receive strong local support and high acceptance in operating areas. For example, a retail dairyman reported that one 14-member family on his customer list—that formerly bought only a gallon of milk a month—now purchases six gallons a week because they have food stamps.

Direct Food Distribution to Families

Nearly 3.3 million needy persons in almost 1,300 counties were participating in the direct food distribution program at the end of 1967.

This program began in the early 1930's as a way to share with low-income families the food commodities which the Federal Government acquired under surplus removal and price support programs. The USDA made these foods available to the States and the States in turn distributed the food to county and city governments. Persons who participated in the program were certified as eligible by local welfare agencies, and they received the food commodities at distribution centers provided by local officials.

In early 1961, only five commodities—lard, flour, dry milk, cornmeal, and rice—were being distributed, with a total retail value of about $2.00 per month, per person. Many counties dropped out of the program.

In January 1961, the number of food commodities was doubled and later it was increased to 14.

The typical family participating in the food distribution program in December 1967 received foods with a retail value of more than $7.00 per person per month. In addition to the five foods already mentioned, needy families could get canned chopped meat, butter, cheese, corn grits, peanut butter, raisins, dried beans, bulgur, and rolled wheat or oats.

The 14 foods being distributed in 1967, if properly used, could provide over half of the daily caloric intake recommended for an adequate diet. In addition, they could supply almost 90 percent of the protein, more than 60 percent of the iron, and more than enough calcium, thiamine, and riboflavin for an adequate diet. However, they supply very little vitamin A and ascorbic acid, as these nutrients are found primarily in fresh fruits and vegetables which cannot be easily handled in this kind of program.

Direct Food Distribution to Institutions

Children and adults in orphanages, child-care centers, homes for the aging, and hospitals—as well as public and private schools—benefit from donated foods that add substance and variety to their diets.

Typical is the Grady Memorial Hospital in downtown Atlanta, Ga., which offers free or low cost medical care to needy people in the area. Despite the problems of large-scale preparation, Grady Hospital's food is good, and is produced at a cost of about 80 cents a meal.

According to Mrs. Eva Rutledge, Grade Hospital's chief dietician, the foods given the hosiptal by USDA "add substance and variety to food served in the hospital, and make our task of meeting requirements for special diets much easier."

The hospital employs a full-time dietician to work with diet patients before they go home and periodically thereafter, helping them to plan versatile ways to use USDA donated foods.

Improving Food-Sharing Programs

Though our food-sharing programs are generally effective, they need to be improved. The major job is to get more people to participate, especially those whom we call "the poorest of the poor." To widen participation in the Food Stamp Program, we reduced the inveestment needed by the lowest-income people to enter the program from $2.00 a month per person to 50 cents. Where it is necessary, welfare organizations will pay the 50 cents. At the same time, we instituted a plan to help all eligible families get started on the Food Stamp Program, by enabling them to make their first month's purchase of stamps at one-half their regular required investment.

Nearly 9 million children attend public schools without lunch programs, and at least a million of these should get free or reduced price lunches. We are using the Child Nutrition Act to attack this problem.

At the end of fiscal 1967, about two-thirds of the 1,000 counties in the land with lowest incomes were being reached with food assistance programs. We intend to close this gap in all the remaining low-income counties, primarily rural, where no food program was available.

Technical Action Panels, made up of representatives from various USDA agencies are spearheading interest and activity in non-participating counties to get needy family programs started. Their efforts in many States are helping us provide food assistance to larger numbers of needy persons.

Surplus Removal Programs

Each year the Department uses a portion of collected import duties (Section 32 funds) to buy food products in temporary surplus for donation to schools, institutions, and needy families. Additional food products of high nutritive value are purchased for the National School Lunch Program with special funds (Section 6) earmarked for improving the diets of school children.

More than 900 million pounds of food products were purchased for these two programs in fiscal 1967, at a total cost of $233 million. We bought:

385 million pounds of meat and oil products, including 73 million pounds of frozen U.S. Choice quality beef.

67 million pounds of poultry, including 54 million pounds of cut-up chickens.

400 million pounds of fruits and vegetables, including 15 million gallons of frozen orange juice, and 23 million pounds of peanut butter.

64 million pounds of dry beans.

Plentiful Foods Program

Food shopping columns, newspaper ads, radio-TV bulletins, and monthly roundups of the current "plentiful foods" all give consumers reliable hints on good food buys. The source for much of this information is our Plentiful Foods Program.

Each month our economists and marketing specialists, after examining the statistical estimates of food production and supplies for the next several weeks, list the foods most likely to be in heavier than

usual supply and therefore "good buys" 6 weeks hence. With the help of mass media and the vast food industry the word gets to those who can use it—millions of food buyers from all walks of life.

In fiscal 1967, special campaigns were conducted for raisins, oranges, peanuts, eggs, turkeys, potatoes, and several perishable fresh vegetables when particularly severe market gluts threatened economic disaster for these commodities.

The plentiful foods list is increasingly useful to teachers, welfare workers, and nutrition specialists in their educational work with underprivileged families in all parts of the country.

OTHER FOOD SERVICES

The people of the United States have the safest, cleanest, highest-quality food in the world—largely because of USDA inspection and standards and grading programs.

Meat and Poultry Inspection

No government program touches more people every day than our meat and poultry inspection services. All meat and poultry products shipped across State lines must carry the U.S. inspection mark of approval.

Our meat and poultry inspectors assured the wholesomeness of more than 84 billion pounds of meat and poultry products during fiscal 1967, nearly 7 billion pounds more than in 1966.

We inspected 30.7 billion pounds of "red meat" (dressed carcass weight) and 11.0 billion pounds of poultry (live weight).

In addition we inspected 17.2 billion pounds of red meat during cutting and boning for use in further processing, 21 billion pounds (finished product weight) of processed meat products, 3 billion pounds (live weight equivalent) of processed poultry products, and 1.3 billion pounds of imported meat and poultry products.

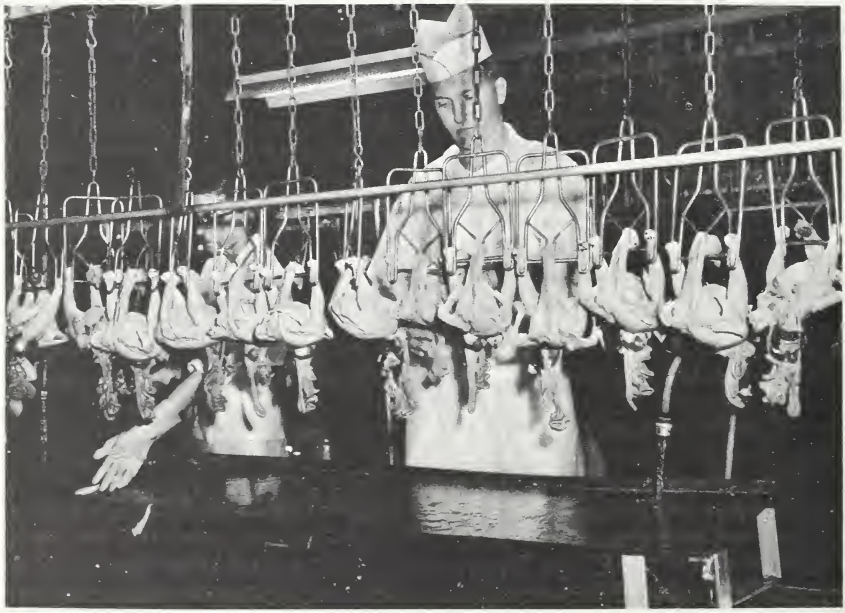
Labels of processed products must also be USDA approved for accuracy, adequacy, and truthfulness. We reviewed nearly 72,000 new and revised labels during the year and returned approximately 4,500 for modification so that consumers would not be misled.

Despite inspection carried on in some 2,000 meat and meat product plants throughout the Nation, a substantial part of the total meat consumed has not been properly inspected or not inspected at all. This is because it does not cross State lines which would bring it under the Federal program, and many States have not had effective inspection programs. To remedy this serious problem the Wholesome Meat Act was passed by Congress and signed by President Johnson, December 15, 1967. The Act provides for a vastly improved Federal-State cooperative inspection program which will ultimately achieve the goal of a totally inspected meat supply.

During fiscal 1968 about 500 additional meat inspectors and other personnel will be hired to carry out the provisions of the Act. We regard the Wholesome Meat Act as a landmark in consumer protection.

Import Inspection

In fiscal 1967, over 1.3 billion pounds of meat and poultry products were inspected and passed by Consumer and Marketing Service in-



Inspecting hams in a smokehouse, and poultry on a dressing line.

spectors for importation into the United States—an increase of approximately 130 million pounds over 1966. An additional 15.6 million pounds were offered for importation, but were rejected as not meeting U.S. standards for wholesomeness, sanitation, or truthful labeling.

To be eligible to ship meat and poultry products to the U.S., a country must maintain an inspection system substantially equivalent to ours. USDA inspection officials periodically review each country's system to insure that standards are being maintained.

These foreign reviews were greatly increased in fiscal 1967, resulting in the checking of 240 establishments in 22 countries. In addition, five other countries were surveyed initially to determine whether their systems were comparable to ours. Of these, two were accepted.

Animal quarantine inspectors checked the health status of 938,000 animals—livestock, pets, and zoo animals—in fiscal year 1967 to guard against entry of costly diseases. About 44,000 were rejected for health reasons.

ARS plant quarantine inspectors and cooperating customs officials also examined thousands of trains, ships, and airplanes, and millions of passenger automobiles during the year to prevent foreign plant and animal pests from entering the country. As in years past, the chief carriers of prohibited materials were tourists. The number of pieces of baggage inspected—48 million—was up more than 6 million from the previous year.

Agriculture's Production Grading

One of the biggest assets of the Nation's agricultural production-marketing-consumption complex is its ability to meet exacting quality requirements of processors and consumers. We use standards for grading to accomplish this goal. Thus, our system of exacting, accurate standards insures that a beef carcass graded U.S. Choice in San Francisco is of the same quality as one graded U.S. Choice in New York. And the grade marks on meat at the food store enable the housewife to pick out U.S. Prime, U.S. Choice, or U.S. Good beef according to the price she wants to pay and the kind of meat dish she has in mind.

We maintained 515 grade standards in fiscal 1967 covering most agricultural commodities. Our specialists constantly review the standards to improve them and adapt them to the changing demands of producers, marketers, and consumers. During fiscal 1967 we revised 14 standards covering Swiss cheese, apples, Brazil nuts, onions, honeydew-honey ball melons, dried figs, canned orange juice, canned spinach, frozen French-fried potatoes, canned ripe and green olives, pickles, cottonseed, and flue-cured tobacco.

We also participated in meetings of the FAO–WHO Codex Alimentarius, an international body organized to develop world-wide standards for food products.

Developing quality standards, however, is only half the task. We must also provide buyers and sellers with unbiased, third-party grading to interpret and apply standards to particular products.

Under our voluntary grading and inspection programs, USDA food specialists certified the quality of more than 580 billion pounds of food and fiber in fiscal 1967—equal to one and a half tons of food and fiber for every man, woman, and child in the United States.

The grand total included 13 billion pounds (64 percent) of the nation's beef, 18 billion shell eggs (27 percent), 1.5 billion pounds of

turkey (80 percent), 5 billion pounds of other poultry products (62 percent), 63 percent of the butter, and 7 percent of the cheese.

There were significant increases over 1966—1.3 billion pounds more beef, 12 percent more shell eggs, 19 percent more turkeys, and 8 percent more cheese.

We also provide a voluntary, industry-supported "continuous inspection" program for other commodities to help assure consumers of cleanliness and quality. In fiscal 1967, we certified the quality of 88 percent of the liquid egg product produced, 74 percent of the dried eggs, 44 percent of the nonfat dry milk, and more than a billion pounds of frozen citrus products under an agreement with the State of Florida.

Other grading programs are of primary interest to agricultural marketers, although consumers benefit in the long run from these services. Grading of these products, including regrading of some products at successive points in the marketing system, involved 51 billion pounds of fresh fruits and vegetables, 9 billion pounds of cotton, 446 billion pounds of grain, 96 percent of the tobacco produced, 40 percent of the canned fruits and vegetables, and 80 percent of the frozen fruits and vegetables.

Among our newer services is yield grading of beef. This nearly doubled in fiscal 1967, rising from 342 million pounds in 1966 to 619 million pounds, representing better than 3 percent of the nation's beef.

These programs are carried out by our Consumer and Marketing Service. Other agencies, however, also help improve the quality of agricultural products.

Thus, the Cooperative Extension Services in most cotton producing States have initiated or are in the final planning stages of introducing cotton quality improvement programs. The South Carolina Extension program, aimed at producers, ginners, and spinners, is a good example.

In 1966, 93 percent of the State's cotton crop was bought immediately by the mills—a 53 percent increase above the amount sold immediately to the mills the year before. The increase reflects an improvement in fiber qualities resulting from changes in production and processing practices.

IMPROVING FAMILY LIVING

Many of our agencies offer "family living" services.

An important part of Extension's work, for example, is to improve family living by teaching consumers to make more rational purchasing decisions. Nearly 3,000 county Extension offices in the county are, in effect, consumer education centers. Their assistance is available to the public generally, but the young marrieds, adolescents, disadvantaged, and senior citizens are special "targets."

In Hawaii, Extension home economists were asked by educational directors on several military bases to provide a program on money management designed for young service people in serious financial difficulty. The first two short courses, consisting of 10 lessons each, were "command enrollment" for those in the most serious financial trouble. Student resentment was evident during the first two sessions. By the third session, however, interest was so high that men stood in line after classes to discuss personal problems with the Extension home economists.

More than 600 servicemen have been enrolled in 18 workshops. The problems most frequently encountered by these military families included unwise use of credit, impulse buying, lack of knowledge about sales contracts, and inexperience in family budgeting.

During November 1966 and again in 1967, Extension made a concerted effort to focus public attention on the many consumer educational services available at county offices. More than 700 counties have had "open house" or other major events to feature these services. The results have been gratifying. In Oklahoma counties, for example, 1,137 office visits, 810 telephone calls, and 4,492 requests for publications are attributed to the stimulus of "Calling Consumers" week.

Nutrition Programs

A major goal of our home economics programs is to help families improve overall health through better nutrition. Diets of children and youth are among those most deficient.

Thirty State Extension Services are conducting intensive nutrition programs for young families. Other States also carry on such programs at varying levels of intensity.

The Minnesota Extension Service conducted an intensive program in 10 counties. The total program consisted of five workshops devoted to essential nutrients for health, growth, and development; foods to supply the essential nutrients; simplified meal planning; principles of cookery and their relation to nutrition; and ways to get more food for the dollar. The workshops are being held in the other Minnesota counties as fast as resources permit.

Special efforts are being made to help recipients of donated foods and participants in the Food Stamp Plan use these foods and stamps to improve nutrition and also to make better food buys.

Extension has employed more than 374 aides to work with participants in these programs, supervised 551 aides employed by other agencies, and trained 6,030 volunteers who work with program participants. We have also trained 3,200 aides and 3,160 professional workers of other agencies to help recipients and participants understand and use the programs to better advantage.

During 1967, Extension workers devoted more than 85 man-years to assisting recipients of donated foods and participants in the Food Stamp Program. More than 465,000 families in 725 counties receiving donated foods and more than 343,000 families in 367 counties participating in the Food Stamp Plan were assisted.

Food scientists are concentrating much energy on the dietary problems of weight-conscious America. They are comparing fats with carbohydrates as contributors to obesity, and are determining whether timing and spacing of meals have any effect on weight.

Tests show that as long as weight watchers control the amount and kind of food they eat, it doesn't matter whether they eat two light meals and a heavy meal, three meals of equal size, or even six meals spaced throughout the day.

Researchers at Beltsville reduced the fat-flour ratio in cake from the standard 1 to 4 to 1 to 8 and were still able to produce a palatable, attractive cake.

Nutritionists working with rats proved that reduced food intake helps promote activity. Rats fed limited amounts of food used their

exercise wheels more than rats that were allowed to eat all they wanted.

A survey of American eating habits taken in fiscal 1967 will serve as a basis for nutrition education programs, and will benefit economic and marketing research on demand for farm products. American families spend an average of $35 per week on food—$6 of it on food eaten away from home.

Studies were made of the nutritional quality of noon meals served to children under the National School Lunch Program. They were found to be adequate in calories, protein, and calcium. Future studies will measure vitamin content, minerals other than calcium, and fatty acids.

Aids to Youth

Non-professional program assistants in growing numbers are helping to expand 4-H work.

These are usually part-time employees assigned to carry out specific jobs such as organizing new clubs, recruiting new adult leaders for clubs, handling enrollment of new members, and planning achievement events. The professional staff is thus freed to devote more time to overall program planning, development of locally produced materials, and general program development. The Arkansas Extension Service largely pioneered the use of program assistants in cooperation with the Federal Extension Service.

In Worcester County, Massachusetts, five assistants have organized 30 new clubs, recruited and trained 25 new adult leaders and 14 junior leaders.

Many State Cooperative Extension Services turned to television to spread the influence of 4–H and to give increasing numbers of youth the opportunity to participate in 4–H type training. The most widely used program series is "The TV Action Club" featuring civil defense. Other series treat electricity, science, automotive, and dog care and training.

Nearly 750,000 boys and girls in 35 States participated in 4–H through television in 1967.

In part, because of the TV Action Series, the Office of Civil Defense, Department of Defense, has awarded the Nation's 4–H Clubs a Distinguished Service Citation for outstanding contributions to the National Civil Defense Program.

CIVIL DEFENSE

The Department has a major responsibility for civilian defense. In a national emergency it might be necessary for our people to exist for a time on stocks of food currently available in homes, stores, wholesale establishments, and on supplies of food located in distribution channels before the wholesale level. It might also be necessary for farmers to adopt emergency measures to protect livestock and feed supplies and to know how to resume production as quickly and effectively as possible.

"Built-in readiness" is the byword of USDA's civil defense program.

Our Consumer and Marketing Service is responsible for developing the Department's capabilities for efficient management of existing food supplies. In addition, it has the task of assisting State and local governments and the food industry in carrying out their responsibilities for food distribution, including consumer rationing and mass feeding.

During fiscal 1967 we developed and proposed two Standby Defense Food Orders for use in the event of an attack upon the United States. The more important of these, a regulatory order, provides a flexible framework within which food management suborders can be issued to meet specific needs at any time and place. The other, a procedural order, offers a means of obtaining relief from unreasonable hardship resulting from compliance with any Defense Food Order.

In addition, 40 State food profiles were completed during the year to assist individual States in their civil defense planning. The remaining 10 profiles were being developed by the end of the year.

USDA is currently represented on all State defense boards. Through this representation we participated in the development of 48 State government food plans during fiscal 1967, as well as various State and county defense training programs.

USDA'S WAR ON WASTE

Finally, we seek to assure the effective use of knowledge for better living in our USDA programs by a continual examination and reassessment of our activities. We do this with the attitude that every USDA dollar must be spent with thrift and common sense dictated by a realization of how hard the American taxpayer worked to earn it.

A saving of $502.9 million was established as our goal for fiscal 1967. We hoped to achieve it by savings of $57.9 million from planned improvements in agency operations and $445 million from changes in farm programs financed with Commodity Credit Corporation funds. Our actual savings totaled $722 million, consisting of $89.8 million from operational improvements and $632.2 million from farm program and CCC policy changes.

The breakdown for the latter figure is as follows:

—Reduced expenditures for the upland cotton program stemming from the Food and Agriculture Act of 1965	$383.0 million
—Reduced carrying charges on feed grains and wheat	$102.9 million
—Dollars realized through the substitution of grain sorghum for food in lieu of wheat—foreign currency sales under Title I, Public Law 480	$96.5 million
—Lower expenditures for the flue-cured tobacco program because of legislation the Department helped develop that emphasizes quality rather than quantity	$38.4 million
—Reduction in authorized level—Cropland Adjustment Program	$5.9 million
—Reduction in payments by granting emergency haying and grazing privileges on diverted or retired cropland	$5.5 million
Total	$632.2 million

Economies such as the following are typical of the large and small "belt tightening" and "dollar stretching" activities of our employees in the area of operational improvements:

Fourteen agencies of the Department saved $7.4 million through "job engineering," realignments of work, elimination of positions, and delays in filling vacancies.

The suggestion of an ARS employee to use helium balloons to guide planes is producing savings of $5,000 per year.

An old calvary horse barn at Front Royal, Virginia, was converted to a feeding facility for cattle research, producing a savings of $16,600.

The thrust of cost reduction must be constant. Looking to the future we are considering establishment of Cost Reduction Councils in all USDA agencies. The Program and Budget Review Committee sponsors efficiency and economy efforts at the departmental level. It may be, however, that Cost Reduction Councils at the agency level would add considerably to our progress. Another challenge is to coordinate more effectively the cost reduction and incentive programs. Still another is how best to translate cost reduction savings into usable resources.

These challenges, among others, are now in the forefront of our thinking.

A DREAM OF TOMORROW

In a little more than 3 decades America and the world will turn the corner into the 21st century. What will life be like then—in agriculture—in the countryside—in the home?

AGRICULTURE TOMORROW

Some envisage the year 2000 as the time when the American farmer will finally be freed from the arduous and time-consuming demands of planting and harvesting. They see him sitting in an air-conditioned farm office, scanning a print-out from a computer center, typing inquiries on a keyboard which relays his questions to the appropriate computer oracle.

From the computer center, which he owns in partnership with other farmers perhaps through his cooperative, come the answers which help him decide how many acres to plant to which crop, what kind of seeds to sow, what kind and how much fertilizer to apply, exactly what his soil condition is, and on what day to harvest which crop.

The fields of this farm of tomorrow are carefully graded and contoured to control erosion and the use of precious water. The soil contains nutrients to meet the specific needs of each crop, and it is treated to control harmful organisms, weeds, and plant diseases.

Crop rows are separated by impervious strips that catch rainfall and drain it to nourish the plants. Whole hillsides of unproductive land are treated to shed previously wasted rainfall and deliver it to reservoirs serving small towns and recreation areas. The surfaces of the reservoirs and lakes also are treated to cut down loss of water by evaporation.

Irrigation is completely automated, controlled by computers, and the water used in irrigation is treated water from poor-quality sources.

Virus-free plants, bred by geneticists, give higher yields in a much shorter period. Most of the crops of the 1960's are still grown but each cornstalk produces multiple ears, and cotton plants have all of the bolls clustered on the top branches for easy harvesting. Since crops have been bred to need only a fraction of the water formerly required, they are much less affected by drought. Plants have been redesigned with sturdy stems and with all leaves exposed to the sun for maximum use of light. Parts of the plant once discarded at harvest are now put to use.

All the field work is carried out by automated machinery, directed by tape-controlled programs, and supervised by television scanners mounted on towers.

Robot harvesters complete the farming operation with high-speed picking, grading, packaging and freezing, and then transport produce to transportation depots for distribution to retail warehouses.

Few livestock are visible in the fields, although we produce twice as many as in the sixties. Livestock are kept in environmentally controlled shelters that dot the landscape. More people are eating meat, for cattle, hogs, and sheep grow to market size on a third less feed and in a third less time. Hens, kept on an 18-hour cycle, lay not 240 but 350 to 400 eggs a year.

Weather is no longer an incalculable threat. Satellites make possible long-range forecasting, providing time to prepare for, divert, or dissipate damaging storms.

The same shiny space satellites, equipped with the most sophisticated remote sensing instruments, supply the information needed for farmers to make key decisions.

They detect differences in soil, identify different crops and kinds of forest trees, determine damage by diseases and drought, and assess crop stands and vigor in order to predict production.

This information, gathered from throughout the world, is transmitted to computers for analysis and immediate use.

The hungry nations have learned to feed themselves and to stabilize their populations. The soils of the world have been inventoried, and each crop is grown either on the soil best suited for it, or on soil chemically modified for maximum productivity.

Up-to-date agricultural know-how has been put to work all over the earth to provide irrigation, drainage and reclamation, pest control, fertilizers, hybrid seeds, new plant strains, growth regulators, and new tools.

We have a running inventory of acreage and output of all crops, and we use accurate predictions to guide marketing and distribution to avoid waste and local shortages and surpluses.

For example, suppose the control station requests a check on the maturity of the North American wheat crop. A signal is sent to the spacecraft sensor, and within a few minutes the results are in. The grain in Oklahoma is ripening fast and threatens to glut local markets. Information goes out to farmers to enable them to manipulate artificial light and apply growth-regulating chemicals to slow the maturity of Oklahoma wheat and perhaps to speed ripening in part of Kansas to meet a scheduled shipment overseas.

Homeowners, too, use the same light-manipulating and growth-regulating chemical techniques to keep their lawns and shrubs at desired height without mowing or clipping.

Although the spacecraft sensors can determine crop damage by insects, scientists seldom have occasion to measure such damage. Combinations of biological and specific chemical methods have eradicated the dozen insects that caused half the losses in the sixties, and control the 100 or so other crop-damaging bugs.

Only about 2 million people are engaged in farming in the United States. Yet, despite the size and the cost of the farms of tomorrow, they are still family-owned and operated. A creatively flexible system of financing meets the heavy farm credit needs; and automation has reduced the required number of human workers to a minimum.

AMERICA THE BEAUTIFUL

Despite the decline in numbers of farmers, the countryside is proportionately more heavily populated than it has been for a century.

The historic migration from the countryside to the city ended when far-visioned businessmen, industrialists, government leaders, and social scientists joined forces to restore economic opportunity—and economic appeal—to rural America thus spreading out the populace and relieving the strain on congestion-troubled cities.

The sprawling strip cities predicted by many in the sixties, contiguous metropolitan complexes extending over hundreds and hundreds of miles, stopped spreading. Instead, our 300 million people are dispersed across the Nation, many of them in brand new towns and cities of planned, manageable, healthy, and esthetically satisfying proportions.

Three hundred million Americans live in less congestion than 200 million lived in earlier.

Urban centers are free of smog and blight, with ample parklands within easy reach of all. Rivers have been scrubbed of pollution and silt, and the air sparkles once again.

America's woodlands are more beautiful, more productive, more used in the year 2000 than ever before.

New methods of timber harvesting save billions of cubic feet of timber once wasted. New uses of low-grade timber bolster local economies, and the mechanization of reforestation, forest culture, and timber harvesting increases timber workers' income. Water shortages are eased by tapping deep snowdrifts in alpine fields.

Lightning fires are curtailed, parasite and predator damage to trees is biologically controlled, trees are tailor-made, and a wide assortment of new paper products and wood chemicals has been developed.

THE HOME OF TOMORROW

The typical American home in the year 2000 is in the countryside. It is part of a cluster surrounded by an open park in one of hundreds of "new towns," each containing its own shopping center and factories within easy walking or driving distance.

Inside, the home is divided by movable partitions, rather than by rigid walls, to increase or diminish the number of rooms as the size of the family changes.

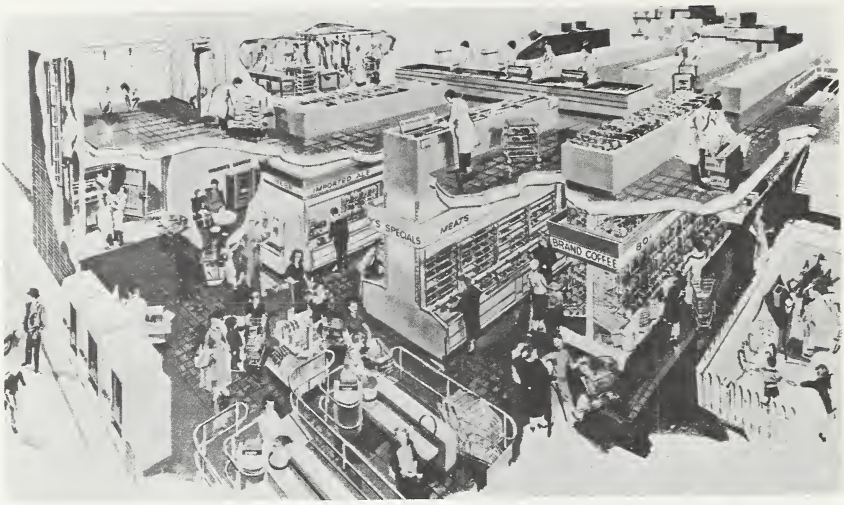
In the kitchen, one wall contains the refrigerator, a built-in unit with pull-out drawers, each with a different temperature for different foods, each with its automatic defrosting unit. There is still a dishwasher, for, although disposable dishware is used for everyday occasions, most housewives still prefer china when company drops in.

By the standards of the sixties the contents of the refrigerator are startling: Square tomatoes bred by plant geneticists for less damage in shipping; frozen lettuce and salad mix, preserved by cryogenic advances, with all the flavor and characteristics of today's fresh lettuce; instant sandwich mixes.

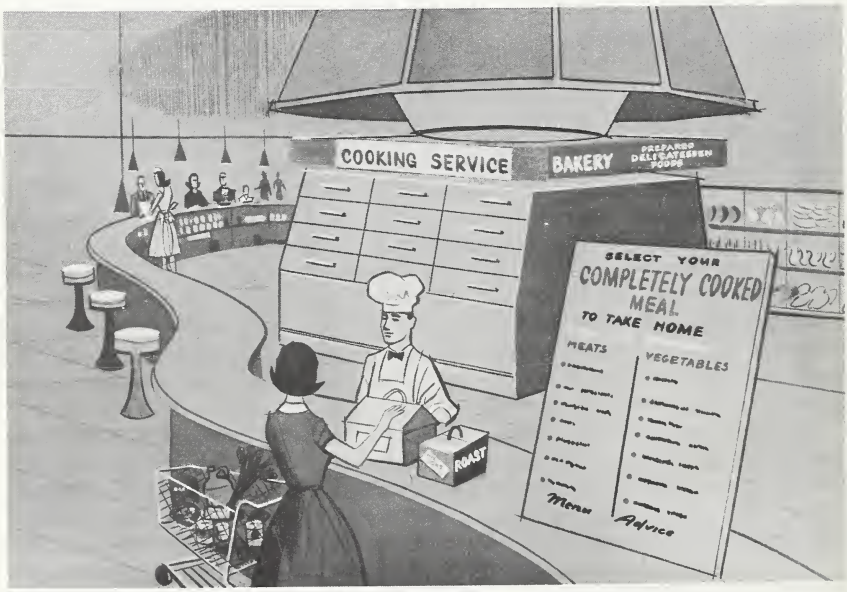
Contents of the cupboard are even more exotic: Sheets of freeze-dried catsup, barbecue sauce, gravy, pickle relish and syrup, ready to be reconstituted at the housewife's convenience, good indefinitely without refrigeration.

Some of the products look familiar, but are radically different from today's food: High protein corn products and cereals, bred by plant geneticists; meat, tailor-produced for the exact fat content desired; milk with whatever butterfat content the family desires for its own dietary requirements.

On the wall, above the laser-beam slicer, is a hook, but no flyswatter hangs on it. The flyswatter has joined the buggywhip in oblivion, for the common housefly has been eliminated by new techniques in black



Sketch of the supermarket of the future.



Food will be cooked on the spot in electronic ovens.

light, infrared or magnetic waves, or perhaps bred out of existence by sterilization of the population, much as the screwworm was eliminated by Department scientists back in the sixties.

THE ECONOMY OF TOMORROW

The consumer, meanwhile, is working less, but enjoying it more. The 30 or 35 hour work week has become a reality for most wage earners. The economy is turning out trillions of dollars a year in gross national product.

The median family income, measured in constant 1967 dollars, has more than doubled. The farmer, in command of scarce and highly technical skills needed to feed a burgeoning population, at last is sharing fully in the Nation's prosperity.

Grades and labeling have become standardized in all parts of the marketing system and all parts of the Nation.

A Federal-State network of inspection programs guarantees the wholesomeness of all foods, regardless of where they are produced or whether or not they are shipped across State lines.

The supermarket is different, too. Rather than stocking items for carryout, it has become a giant sampling shop, where the shopper picks out what she wants from the display, inserts her credit card into a slot, and picks up her purchases at the door. Bills are totaled automatically and long waits at the checkout stand eliminated.

Perhaps all this seems far out. Actually, it is probably a rather conservative picture of the future. The technology to produce it is either already in existence or is now being researched. Many more developments, some which haven't even been thought of yet, will become visible in the future.

Think back, for a moment, over the past 3 decades to a year as far in the past as the 21st century is in the future.

Who, save a handful of prescient physicists, foresaw transistors, computers, hydrogen bombs, satellites, and the moon rocket? In the social sciences, who foresaw the explosive growth of the suburbs, the impact of nationwide television, demonstration cities, cold wars, and new nations?

All of these things fundamentally altered the very character of American life, shattering old patterns, creating new ones. And all the king's horses, and all the king's men can never put it back together the way it was.

The pace of change is growing almost geometrically. And so we know that the world of the year 2000 will be different in kind, as well as in degree, from today's world.

To some this is frightening; to others it is challenging and exciting.

No one can predict the future with absolute certainty—and it is well that this is so. But we can dream. We can hope. We can even project, with some certainty, based on what we know and what we want.

Will our dreams come true? Time alone will tell. But this we believe: The world of Agriculture/2000 can be a far better world than that of 1967.

It *will* be—if we are determined to make it so.

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